Holds Uniform Temperature in Permanent Molds of New Type

Success of the Process Is Based on This Fundamental—Molds Which Have Turned Out 25,000 Gray Iron Castings Appear To Be in Perfect Condition—Circulating Oil Is Used as Cooling Medium

By Pat Dwyer

Fig. 1—Hand Ladles Are Supported on a Suspended Rod

WITH few exceptions every foundryman at one time or another has toyed with the idea of a mold that might be used repeatedly. The instinctive feeling of conservatism and objection to waste in any form which characterizes the man whose prosperity depends on the margin he can maintain between his costs and his selling prices, rebelled against the practice of destroying an expensive mold after it had served its purpose only once. With the great majority of men the idea has been an idea and nothing more. Comparatively few have tried to put their thoughts into tangible form and an even smaller number have achieved any measure of success. The experimenters ran into so many varieties of metallurgical and mechanical trouble that they not only became discouraged, but the published result of their experiments prevented others from attempting any research work along this dangerous and expensive pathway.

The foregoing is true particularly in reference to iron castings and to nonferrous castings into which the metal is poured at a comparatively high temperature. Adventurers in the white metal field where the pouring temparatures are low met with gratifying success in the development of the permanent mold and today a great quantity of white metal, lead, zinc and aluminum castings are made according to that process.

Two great fundamental problems prevented the adoption and application of the permanent mold as readily to the production of iron castings as to the production of castings in the so-called white metal class. One was the lack of suitable mold material and the second was the natural law which juggled the carbon in a highly disconcerting manner according to the temperature of the metal and the speed at which it was cooled.

The melting point of either cast iron, steel or bronze is approximately twice that of the nonferrous metal poured into molds made from these materials. If any metal was available as much more refractory than iron, as iron is to tin or zinc, the problem of developing a permanent mold in which to pour iron castings would be considerably simplified.

Behavior of iron in passing through successive stages between 2600 and 1400 degrees Fahr., has offered the greatest single obstacle to the development of the permanent mold. Several types of permanent molds have been tried, many of them theoretically and mechanically perfect, but through one reason and another few have survived. In justice, it must be admitted that in some cases outside factors entirely beyond the control of the inventor halted the progress, while in others the inventor abandoned his efforts when he found that the process was not a success commercially.

In the latest type of permanent mold the problem was attacked from a new angle and the machines that have been placed on the market by the American Foundry Equipment Co., New York, apparently are fulfilling every expectation. The process of which the mold is an impor-

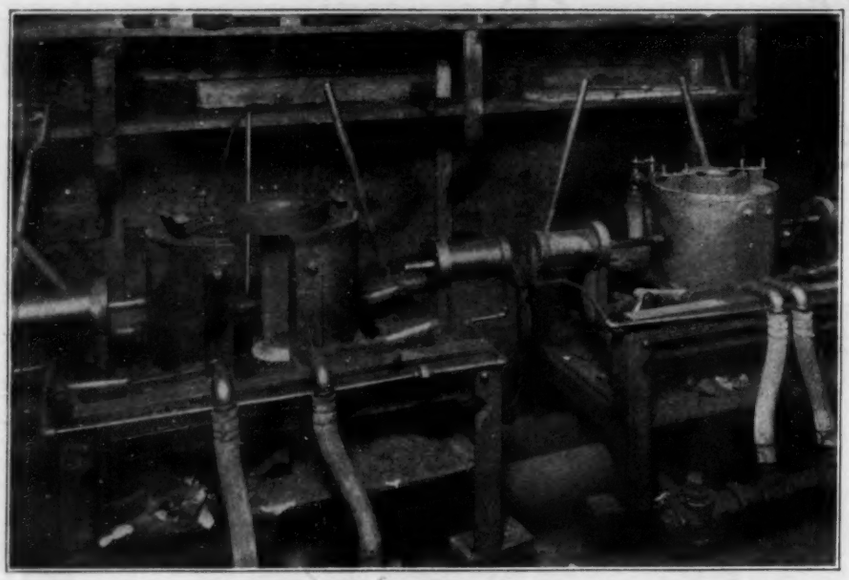

FIG. 2—THE MOLD AT THE LEFT IS SHOWN OPEN WITH THE CORES IN PLACE. THE MOLD ON THE RIGHT IS CLOSED AND HELD IN PLACE WITH THE PLUNGERS FROM TWO SMALL AIR CYLINDERS

tant part was developed in this instance by a mechanical engineer who was not hampered in his investigation by any former foundry training or tradition. He was perfectly free to form his own theories and draw his own conclusions from the mass of available literature that has been printed on the subject of permanent molds.

Although the process was developed to a point where the molds proved commercially successful nearly two years ago, still it was only recently that customers were sought who might be interested in installing the process in their foundries. This attitude of conservatism, a desire to subject every feature of the process to the merciless test of time has characterized the principals in the movement ever since the first survey was made nearly five years ago.

Much Preliminary Work Done

Approximately six months were spent by H. A. Schwartz, the inventor of the process, in securing first hand knowledge of all the work heretofore carried on by other men along this line. Drawings, descriptions, patent specification and several types of long life molds actually in operation were examined minutely. As a result of this examination he arrived at certain definite conclusions. He constructed a few molds and satisfied himself by a number of tests that his theories were correct. A number of prominent men including D. J. Ryan, Cleveland, became interested and for the past two years all the work has been conducted in the shops of the Allyne-Ryan Foundry Co., Cleveland, of which Mr. Ryan is president and active head.

Success of the present process is based on many factors but they all hinge on the fundamental fact that the mold must be maintained at a reasonably uniform temperature. Examination disclosed that deterioration of permanent molds was due not so much to high temperature as to excessive fluctuations and uneven distribution of mold temperature caused by the intermittent pouring of highly heated molten metal into the molds. Unless this fluctuation is prevented, the faces of the molds eventually develop a myriad of small cracks which destroy the usefulness of the molds. A more serious fault resulting from uncontrolled or widely fluctuating temperature is the well known tendency of cast iron to grow as a result of repeated heating above a certain temperature. This feature renders the mold inaccurate and consequently useless. Many of the molds at the Allyne-Ryan foundry have turned out lots of 25,000 castings and apparently are in as perfect condition as when they were new.

Castings cannot be produced commercially in cold iron molds. They cannot be produced in extremely hot molds on account of the tendency of the fluid metal to adhere to the face of the mold. Also, as stated previously, exceedingly hot molds soon deteriorate on account of cracking and growth. Water cannot be employed as a cooling medium because it vaporizes at 212 degrees Fahr. and that is too low a temperature to operate the molds successfully. The solution of the problem was found in using a fluid such as oil with a fairly heavy body and a flash point above 400 degrees as a cooling medium for the molds.

Oil Cooled Molds Designed

Each mold is designed with the proper number of sections each with a hollow chamber adjoining the mold cavity and the oil is kept flowing through these chambers during the operating period. The extent of the cooling installation depends upon the character and number of molds to be served but a description of the equipment in use at the experiment station is typical and will serve for illustration.

The oil is stored in an elevated tank and is driven through the mains and various pipe connections by an electrically operated pump at a pressure of 20 pounds to the square inch. Three main lines connected to a header convey the oil to the three batteries of molds. Each mold is provided with suitable hose connections to allow freedom in opening the molds for the removal of the castings. The oil en-

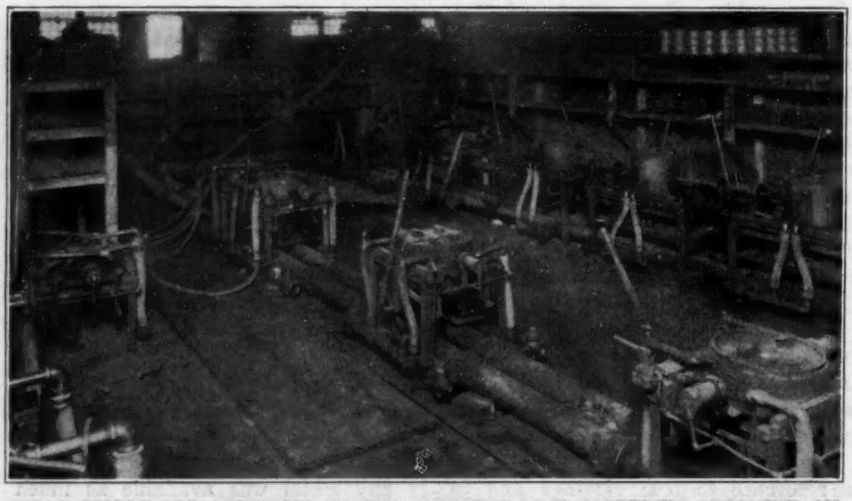

FIG. 3—MOLDS ARE ARRANGED IN TWO STRAIGHT LINE BATTERIES OVER THE OIL SUPPLY LINES. ANY ONE MAY BE DISCONNECTED AT WILL WITHOUT INTERFERING WITH THE OPERATION OF THE OTHERS

ters at one side and is discharged at the other side into a return main which conveys it back to a series of cooling chambers and thence to the storage tank.

Each of these cooling chambers, 15 inches in rectangular cross section and 5 feet in height, is equipped with a great number of vertical ⅝-inch brass tubes through which water constantly is circulating. The oil which fills the chamber is brought into intimate contact with the tubes and is cooled before it passes into the storage tank preparatory to re-entering the feed mains leading to the batteries of molds.

Other important features of the process include thermostatic control devices for automatically retarding or increasing the flow of oil to the molds and a somewhat similar device for indicating the proper instant for removing the casting from the mold.

Mold Temperature Important

When molten metal is poured into a permanent mold, the immediate mold cavity surfaces do not take the molten metal temperature. The surfaces of the mold cavity are finished smoothly and show a well defined cellular structure when examined through a microscope. The harder constituents of the metal are distributed in a manner to form the cell boundaries. As a result of this distribution of the constituents the mold cavity surfaces possess more or less irregular contours with the harder constituents standing in relief in a cellular form above the softer matrix. The small recesses are filled with air or foreign substances which gasify when the molten iron is introduced into the mold and serve as a protective film which is not broken down until after the molten metal has solidified, if at all.

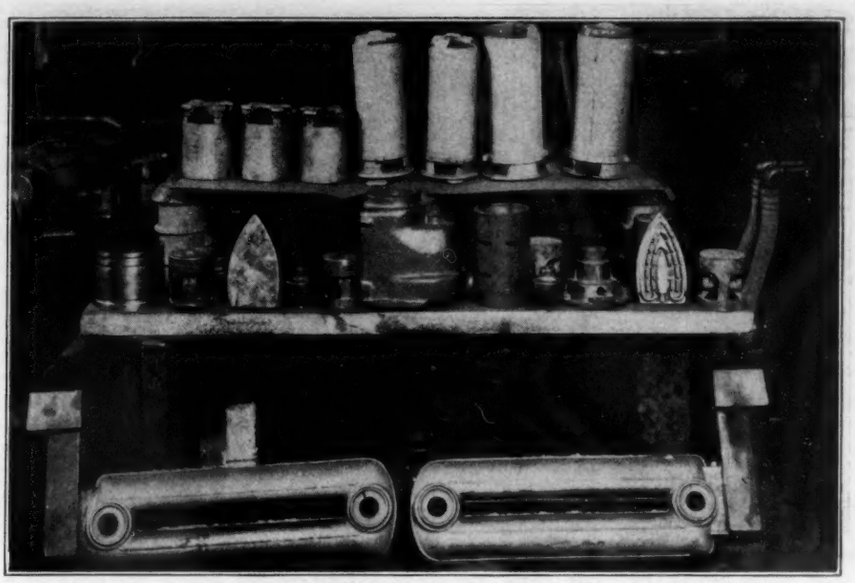

FIG. 5—GROUP OF TYPICAL CASTINGS MADE BY THE PERMANENT MOLD PROCESS THE FORM CONTAINING THE GATE AND RUNNER FOR THE RADIATOR CASTING STILL IS IN PLACE

Chill in cast iron is due to the too rapid cooling of metal from the molten stage to below the critical point, which in cast iron is about 1382 degrees Fahr. A proper portion of the carbon is not precipitated into its free state to form the structure that constitutes soft iron. The success of the permanent mold is based on the belief that carbon precipitation continues after the metal has solidified and only stops when the metal has reached the critical point. A rapid rate of cooling during this stage prevents a sufficient carbon precipitation while a slow rate of cooling promotes precipitation. Variations in the cast iron mixture promote or retard the rate of cooling and carbon precipitation and therefore promote or retard the tendency of iron to chill.

Permanent molds naturally are good conductors of heat and exert a rapid cooling action on the molten metal. To obtain soft, machinable castings from permanent molds it is necessary to remove the casting from the mold as soon as possible after it has solidified. The casting then can cool at a normal rate down to the critical point or at a sub-normal rate if it is buried in refractory material or enclosed in an air tight receptacle. Either of these courses will insure a proper carbon precipitation and soft, machinable castings. In cases where a thin surface chill is present when the casting is ejected from the mold, the hotter interior of the casting brings the surface temperature above the critical point and anneals the chilled skin.

Predetermined Temperatures

From the foregoing it is apparent that this process has taken into account several features either ignored or overlooked by others who have investigated the permanent mold problem. Further, and with these features in mind, measures are being perfected to insure a more uniform product. A predetermined temperature for the mold is established and means provided for maintaining this temperature within close limits. A suitable temperature for ejecting the casting also is determined and with these two principal features under positive control it is claimed that the production of castings in permanent molds is taken out of the hit or miss field and lined up with thousands of other routine processes that present no unusual hazard and require no unusual skill on the part of the operators.

The cooling fluid is circulated through the chamber surrounding the

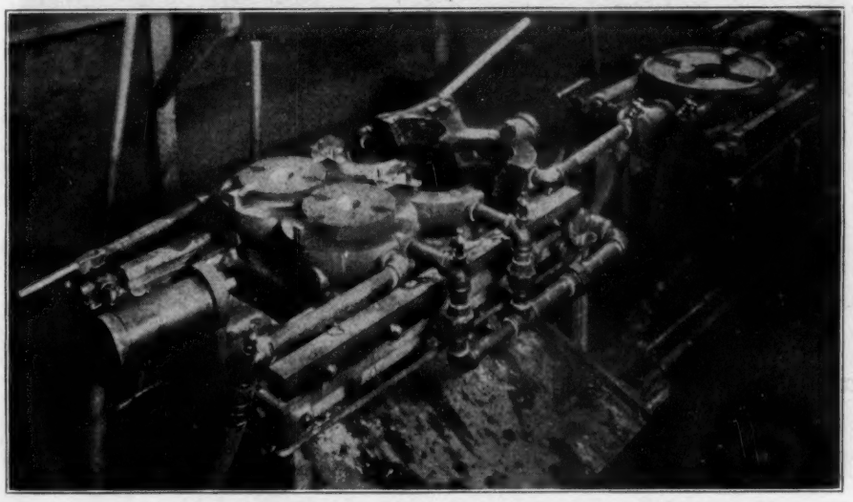

FIG. 4—INTERESTING EXAMPLE OF QUADRUPLE MOLD IN WHICH THE INSIDE SECTION IS STATIONARY WHILE THE TWO OUTSIDE SECTIONS ARE MOVABLE

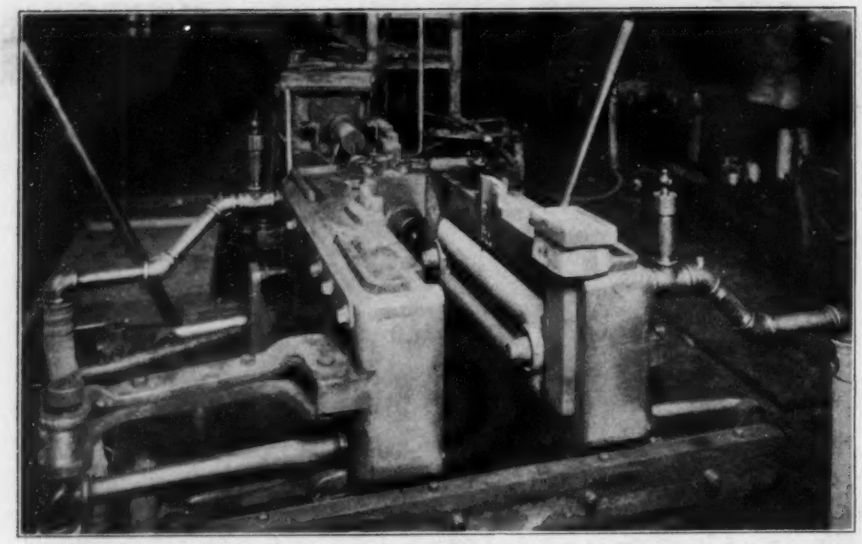

FIG. 6—OPEN MOLD FOR A RADIATOR SECTION WITH THE CORE AND RUNNER FORM IN PLACE. THE CORE REQUIRES NO CHAPLETS. IT IS HELD IN PLACE BY PRINTS ON BOTH SIDES

mold cavity in such a manner that whenever the mold temperature rises beyond a predetermined point the volume is increased to a maximum until the rising temperature is overcome. When the mold temperature falls below the predetermined point the volume of fluid either is decreased or cut off altogether. In other words, the fluid acts as a carrier for heat units. When the permanent mold temperature rises, more fluid is provided to carry off the increased number of heat units. When the mold temperature falls or ceases to rise, less fluid is provided to carry off the decreasing number of surplus heat units.

To insure a regulation both sensitive and prompt in stabilizing the mold temperature conditions, the fluid flow is controlled by a thermostatic device governed by the mold temperature. A thermostat bulb is located in the mold just below the mold cavity surface. At this point an extremely sensitive response is obtained to variation in mold temperature regardless of weight, shape or casting material. The bulb causes valve actuation in the fluid lines and automatically opens or closes them in prompt response to changes in mold temperatures.

Valve Action Slight

While pouring castings of light weight or thin section at short intervals of time, the effect on the established temperature range is slight. The input of heat units into the mold may not be of sufficient amount to cause the valve to open wide and, conversely, the lower temperature that obtains between pourings will cause the valves to close but slightly. The mold cavity walls separating the mold cavity from the fluid chamber are made as thin as practical limitations will allow.

In this process cognizance is taken of the fact that the temperature of the metal entering the mold is bound to vary from time to time during the progress of a heat due to operating conditions. For this reason the time element is not considered reliable in determining the stage at which the casting should be removed from the mold. It is claimed that the temperature of the casting is the only reliable index by which a uniform product may be obtained and therefore a thermostatic control is being perfected to insure the ejection of all similar castings at a uniform temperature. The thermal or electrical contact when the casting in the mold reaches a certain predetermined temperature, is actuated and either causes the registration of the proper ejection time or automatically initiates the ejection mechanism itself. In this way a run of castings is insured with substantially the same hardness and physical structure.

It is held that evils charged to phosphorus, sulphur and other elements in cast iron are not due to the presence of the elements in themselves, but to the manner in which segregation takes place in the structure of the casting. The molten metal by solidifying rapidly in the permanent mold forms a casting with a structure in which segregation has been minimized and one which has an exceedingly dense, fine grain. Where the newly formed casting is ejected from the mold shortly after it has solidified and where it is allowed to cool slowly past the critical point, the carbon in the cementite is precipitated in the free state and the resulting casting is soft and machinable.

Hardness Under Control

Varying degrees of hardness may be obtained by allowing the castings to remain short or long periods in the molds. This feature presents an advantage in the production of castings subject to great wear or castings that require little or no machining, since

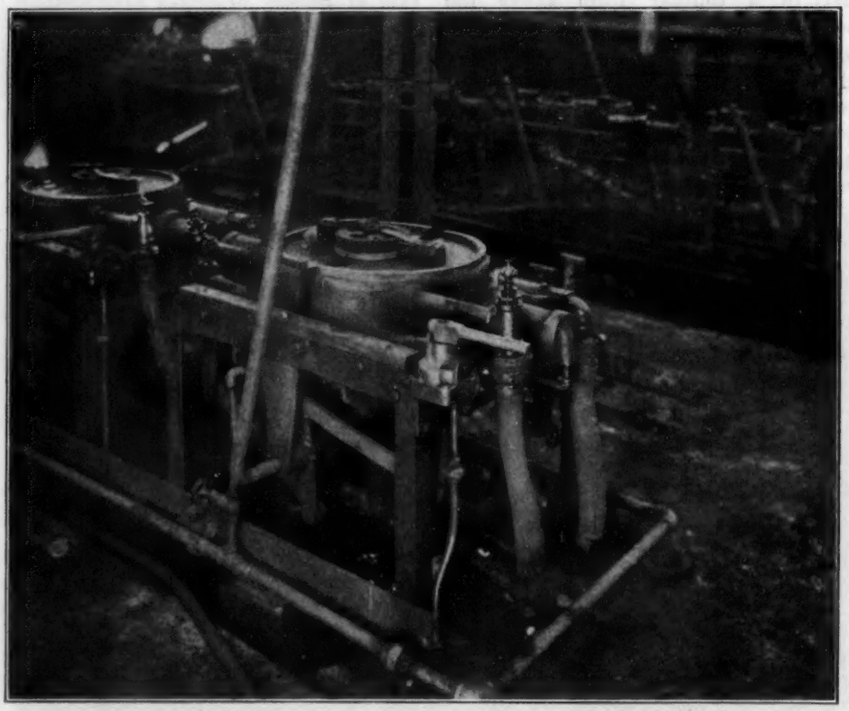

FIG. 7—SHOWING THE BACK OF ONE OF THE MOLDS WITH THE LEVER AND TOGGLE ARRANGEMENT BY WHICH THE HALF MOLDS ARE MOVED BACK AND FORTH

castings made in these permanent molds appear to have exceptional properties superior to those made in sand molds. In comparison tests taken from test pieces made by pouring iron from the same ladle into sand and permanent molds it was found that the permanent mold casting has a deflection approximately twice that of the sand casting and that the tensile and transverse strength are in the same proportion. In addition, on account of the density of the structure porosity was eliminated.

With this great improvement in structural density, the permanent mold casting is easy to machine. Under production conditions castings, it is stated, have been machined at the rate of 200 feet per minute with the cutting tools standing up for a longer period than with ordinary gray iron. It is claimed that the finely divided form of free carbon is responsible for this condition. The smooth surface, absence of scale and accuracy of dimension also effect a considerable saving in machining costs.

The question might be asked, just what production requirements would permit the profitable employment of permanent molds. No definite amount can be named that would take into consideration all casting fields and conditions. Each casting problem must be decided upon in accordance with its own peculiar set of conditions. In some cases a permanent mold equipment has been found cheaper to build than a set of metal patterns.

In comparing results on a production scale the permanent mold in every instance has shown a superiority over the sand mold. Installations vary to suit different local conditions, but usually they are arranged in batteries of six or eight mold units. Where the casting is heavy the mold block is only provided with one cavity. Two, four and six cavities are provided in the mold blocks for the smaller castings. Three men can attend one of these batteries and the cycle of operation for the entire battery will occupy a period between about two and three minutes. Thus for example in a battery of eight piston molds each with two cavities it is possible to make 16 castings in less than three minutes. This is at the rate of 300 per hour or 2400 in an 8-hour day. Ultimate production of course will depend on the number of molds in operation.

Each permanent mold unit operating under the process has incorporated gates and vents particularly adapted to the character of the casting. These features are arranged that the molten metal enters the mold with a minimum washing and erosive action and the air and gas escape freely. The style of gate on the radiator section shown in Fig. 6 illustrates this point. The gate and runner is formed in core sand enclosed in two, half-metal forms. The forms act as coreboxes and dryers. After the sand is dried the two halves are pasted together and the assembled runner is placed in a suitable cavity in the mold proper. The cost of the forms and the labor involved in filling them with sand is negligible, but they protect the mold from the erosive action of the falling iron and in that manner the mold itself is expected to last indefinitely.

Making Business a Science

Harvard Business Reports, Vol. I, by the graduate school of business administration, Harvard university; cloth, 561 pages, 6 x 9 inches, published by A. W. Shaw Co., Chicago, and furnished by IRON TRADE REVIEW, Cleveland, for $7.50, postpaid, and in Europe by Penton Publishing Co., Ltd., Caxton House, London, for £1 17s 6d, net.

Pioneering in business science, this volume is the first of what is intended to be a series, in an effort to guide business toward elimination of waste, by presenting the experience of actual business in meeting problems. It is a compilation of recorded experience, an opportunity for exchange of experience and establishment of definite precedents. As a lawyer has precedents to which he can refer, so the business man has need of some source from which he can draw on the accumulated experience of those who have come to the same diverging roads before.

It is the aim of these reports to build up a volume of recorded business precedents, similar to cases in law, which will be readily accessible for business executives. Careful cross indexes will aid in referring to details. In this volume 149 cases are presented, selected from over 3500 cases collected through the school's bureau of business research. Each has particular importance as an example of current business practice or as a guide to sound business management. The decision in each case is that of the business firm and in no instance has the school injected its own editorial opinion.

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An Index to Specifications

National Directory of Commodity Specifications, 1925; by the department of commerce, Washington, D. C.; cloth, 385 pages; published by the department and supplied by IRON TRADE REVIEW, Cleveland, for $1.25, postpaid, and in Europe by Penton Publishing Co., Ltd., Caxton House, London, for 6s 6d, net.

After two years of work the bureau of standards of the department of commerce has issued its first volume of specifications. It is the result of co-operation from more than 500 public purchasers, 500 technical societies and trade associations and many others. Its contents include a statement and endorsement by the advisory board, a foreword by Secretary Hoover and a thoroughly classified list of specifications for all types of commodities. There also is an alphabetical list of commodities, which serves as an index to the specifications and instructions as to obtaining copies of the specifications listed.

More than 100 pages are devoted

to indexing specifications for ores, metals and manufactures and for machinery and vehicles, in keeping with the importance of these industries. They include iron and steel and their manufactures, alloying ores, nonferrous metals and precious metals. The references cover a wide range and furnish information as to the source of the entire range of materials under each head, as determined by trade customs and engineering societies.

Under machinery and vehicles the references are equally broad and cover every phase of this general classification, subdivided to expedite finding the particular item required.

The directory is well bound and printed in small, though legible, type, to keep its size within reason. A total of 27,100 specifications are shown, referring to 6650 commodities.

Since better buying can be done on the basis of definite specifications all those engaged in that endeavor can find much assistance from the pages of this volume.

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Recording Industrial Progress

Commerce Yearbook, 1924, by the department of commerce, Washington, D. C.; cloth, 719 pages, 6 x 9 inches; supplied by IRON TRADE REVIEW at $1, postpaid, and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for five shillings, net.

The 1924 issue of this report of the department of commerce, like its two predecessors, is a mine of information as to the commerce and business of the United States. Information as to every phase of business has been gathered from the most reliable sources. Its contents include a foreword by Secretary Hoover, a resume of general business conditions, discussion of production, employment and domestic trade and sections devoted to various departments of trade, followed by a survey of economic conditions in the principal foreign countries. Charts, maps and tables add much to an understanding of the text.

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Studies Trade Associations

Trade Associations, Their Economic Significance and Legal Status: cloth, 388 pages. 6¼ x 9¼ inches; published by the National Industrial Conference Board, Inc., New York, and furnished by IRON TRADE REVIEW, Cleveland, for $3.00, net.

The recent Supreme Court decision placing the stamp of approval upon the gathering of statistics by trade associations, lends particular interest to the newest published study of the National Industrial Conference board. The book sets out to analyze the economic signification and define the legal status of trade associations, and the result is a comprehensive survey of the whole troublesome problem.

The volume outlines the early beginnings and growth of trade associations. More or less formal organizations may be traced back into the nineteenth century. These groups remained in comparative obscurity for years, but the war directed popular attention to them and there has since been a growing interest in them. Business men as well as the general public discovered that the trade association was an efficient instrument for mobilizing productive resources in various branches of industry for the vigorous prosecution of the war.

The book maintains that the history of economic progress provides sound justification for the maintenance of the competitive principle, but the concrete results of purely individualistic effort under the complex conditions of modern industrial society, have demonstrated unmistakably the need of some measure of conscious regulation of competitive process. This may be achieved through voluntary co-operative action, or it may be brought about by authoritative action of government. The volume under review attempts to point the way to a compromise, and to clarify the problem of in just what proportion the various forces are to be relied upon in directing the modern industrial system.

The first part of the book is devoted to a brief description of trade association development from the inception. In the second part are defined legal limitations of associated effort under the present law.

In Part III are discussed even different types of trade association activity which, according to the circumstances surrounding their practice and the intentions of the parties engaged in them, may or may not be lawfully pursued. The work of trade associations reviewed in these seven chapters raises incisive issues of public policy, and on the basis of economic analysis and of the interpretation of legal rules an attempt is then made to resolve these issues.

Part IV is devoted to an exposition of the major lines of association activity which are in their nature so clearly legitimate that they involve few questions of public policy. The purpose is to reveal more fully the sound and secure foundation for trade association effort in current industrial organization.

In conclusion, Part V attempts a general appraisal of the accomplishments of the trade association movement, its future prospects and the soundness of the existing policy of the law toward these instruments of business co-operation.

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New Materials Standards

A. S. T. M. Standards Adopted in 1925; by the American Society for Testing Materials; paper, 120 pages, 6 x 9 inches, published by the society and furnished by IRON TRADE REVIEW, Cleveland, for $1.50, postpaid and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 7s 6d, net.

This volume is the first supplement to the 1924 issue of the society's triennial book of standards, bringing it down to date. It contains 36 revised or newly adopted standards of the society and is of much interest to all concerned in the production or use of engineering materials.

Among standards adopted are three for nonferrous metals, round and grooved hard-drawn copper trolley wire, seamless 70-30 brass condenser tubes and ferrule stock and seamless muntz metal condenser tubes and ferrule stock.

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Historical Data Of Iron

History of Iron, by Dr. Otto Johannsen, cloth, 248 pages and 222 illustrations, on special paper, published by *Verlag Stahleisen* M. B. H., Dusseldorf, Germany, and furnished by IRON TRADE REVIEW, Cleveland, for $6 postpaid and in Europe by Penton Publishing Co. Ltd., Caxton House, London for 30s, net.

A second edition of this book is now out, necessitated by demand for its first printing. An exceptional work, approved by iron and steel technical associations, it is valuable to the advanced student of the technology of iron and steel as well as to the beginner. It deals with the development of the iron and steel industry from its early days to the present and as a result of research by the author the reader will find much lore that will make clearer the present status of the craft.

Illustrations are profuse and add much to the text, especially reproductions of ancient products and early forms of machinery used in producing iron and steel.

Discusses Welding

"Properties of Steel Filler Rods for Gas and Electric Welding" is the title of a booklet just issued by the Chicago Steel & Wire Co., Chicago. The need for a line of filler rods standardized in all properties has led to the development of the data contained in the pamphlet. Causes of weld failures are discussed and the remedies given with reference to the filler rods. Heat treating of the rods receives some discussion.

Completes New Industrial Road

Ore Mines and Blast Furnaces of Southern Steel Producer Now Are Joined by a Modern Railway System with 5 Miles of Trackage — System Includes Ten Bridges and Two Concrete Arches — Construction Details Presented

TRANSPORTATION of red ore from isolated mines to its Ensley blast furnaces over company owned trackage has been made possible through the completion of an industrial railway system by the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala. Construction work on this project was undertaken in June, 1924, and has aroused interest because it necessitated 5 miles of heavy construction and is an unusually ambitious undertaking for a purely industrial railroad. The new railroad has become known in the Birmingham district as the "High Line" by reason of its elevation above the valleys and overhead crossings with all tracks and roadway.

The map shown in Fig. 3 indicates plainly the conditions confronting this company when planning for a safe, unobstructed, rapid and economical movement of ore. Existing routes were hampered by a long haul, heavy grades and numerous grade crossings with both tracks and highways. The Tennessee company operates 11 red ore mines with slope entrances extending through a distance of approximately 12 miles along the side of Red mountain, at elevations ranging from 710 to 900 feet above mean sea level. These mines are divided into three groups, the Wenonah, Ishkooda and Muscoda. The company owns the tracks serving these mines and the Wenonah and Ishkooda groups were connected by this trackage. The Muscoda group, however, lies some distance southwest of these two groups and it was necessary to build 4 miles of track to connect the three groups and secure a central point for the assemblage of all ore. For assembling and classifying the ore a 185-car capacity yard with track scales has been provided at the southern terminus of the high line.

Assembling Yard Provided

The building of this connection involved no unusually heavy construction. There are two bridges which cross over existing railway tracks, one of which is shown in the accompanying illustrations. There were also two concrete underpasses for roadways and drainage was provided by three concrete waterways and 33 cast-iron pipe culverts. There were 260,000 cubic yards of excavation and 30,000 yards of refuse fill. The assembling yard at Wenonah lies at an elevation of 638 feet above sea level, and 5 miles away, across Jones and Possum valleys, and Flint ridge, which rises between them to an elevation of 620 feet, are located the private industrial tracks which serve the main operations of the company. These tracks are at an elevation of 600 feet. Possum valley drops to an elevation of 525 feet and Jones valley to an elevation of 490 feet.

The high line system descends from the mountain for a distance of approximately 2 miles on a maximum grade of 1½ per cent, compensated for curvature, to Valley creek, which marks the low point of Jones valley. There the track drops to an elevation of 530 feet and then begins the ascent of a 1 per cent grade for a distance of a half mile, after which the maximum gradient is 0.4 per cent. The 1½ per cent descending grade is in the direction of the loaded movement and the momentum acquired in this descent will be utilized in ascending the 1 per cent grade against the loaded movement.

In the 5 miles which constitute the high line there are nine bridges over railroad and utility tracks and public highways, and one over Valley creek. Bridge No. 1 is the largest structure on the high line, crossing over a private roadway, a waterway and five railroad tracks. The masonry for this bridge consists of two buried abutments and seven piers.

FIG. 1—HIGH LINE ORE TRACK OF THE TENNESSEE COAL, IRON & RAILROAD CO., BIRMINGHAM, ALA., SHOWING BRIDGE NO. 1 OVER FIVE RAILROADS AT FAIRFIELD, ALA., LOOKING SOUTHEAST

FIG. 2—BRIDGE NO. 2 OVER THE NORTH BESSEMER ROAD AND FAIRFIELD UTILITIES CO.

It is 800 feet in length, of deck plate girder construction, with spans varying from 53 to 110 feet in length and girders of a uniform depth of 11 feet. It has a deck of concrete floor slabs which carry the tracks and provide a trough for ballast. The appearance of the top of this structure is shown in Fig. 4. The buried abutment design is used on all high line bridges except for the south abutment of No. 3 and both abutments of No. 12. Thus liberal provision was made for increased traffic on highways and tracks crossing under the high line, is being an easy matter to utilize the approach spans for widening the roadways and double tracking under the bridges should it become necessary in the future.

In addition to the bridges on this line there are two concrete arches, six concrete waterways and seven cast-iron pipe drains. The masonry contains a total of approximately 22,000 cubic yards of concrete in which were used 685,000 pounds of reinforcing steel. All of the reinforcing steel and a large portion of the 1660 tons of bridge steel were rolled by the Tennessee company at its Fairfield and Bessemer mills, and all steel fabrication and erection was handled by company forces.

Excavation for this track was not heavy, amounting to only 195,000 cubic yards, the largest cut through Flint ridge, however, reaching a depth of 56 feet. In addition to the excavation yardage, 1,100,000 cubic yards

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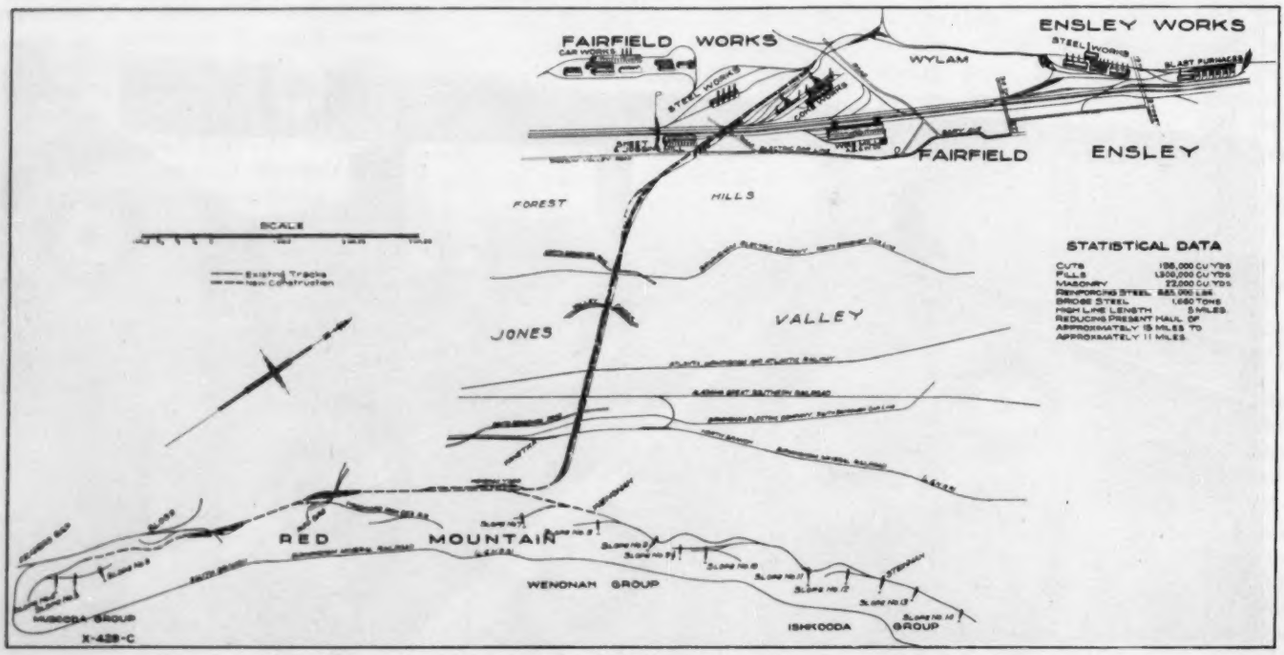

FIG. 3—MAP SHOWING TRACKAGE FOR ORE TRANSPORTATION FROM THE MINES OF THE TENNESSEE COAL, IRON & RAILROAD CO., BIRMINGHAM, ALA., TO ITS BLAST FURNACES AT THE ENSLEY WORKS

Reducing Foundry Accidents

A Description of Methods That Have Proved Effective in Plant Employing 600—All Workers Pledged To Observe Safety Rules—Education and Mechanical Safeguards Important

By E. H. Ballard

SAFETY is not easily sold to the average employe. We believe one of the best salesmen is a good safety inspector who is constantly mingling with the employes, not as a watch dog, but as a protector and advisor. His very presence in danger zones has resulted in marked reductions in lost time accidents from handling molten metal as well as other hazards, which we will show by comparison later.

In one of our smaller plants employing about 600 people, it has been our practice for several years to utilize the services of our safety inspector by having each new employe presented to him and he in turn introduces the new man to the foreman on the job, acquainting him with the hazards, explaining the fundamental rules of safety, the benefits offered by the company, and the new employe's responsibilities. Before the new employe commences work he signs an agreement to use all safety devices furnished him, wear moulder's safety shoes, if obliged to carry molten metal, and generally obey safety rules, also to report injuries, even slight, to the proper party. He also agrees to use his best efforts to guard himself and fellow employes against accident. There is every evidence that this agreement entered into with the new employes has been very beneficial.

In the plant referred to, both iron and steel castings are produced. Our hazards are common to other plants producing a similar line of work. I will review briefly some of the more important safety measures.

Steel is produced in open-hearth furnaces, charging being done by machine, using the standard design of steel charging boxes, except that our boxes today are provided with numerous cored holes in the bottom to allow moisture to drain away prior to charging of material into the furnaces. Some years ago before drain holes were provided, on one occasion during winter, ice covered scrap was delivered to the furnace platform in charging boxes. After standing for some time the ice melted and as there were no provisions for escape of water, boxes when charged into furnace contained considerable water. When boxes were dumped, water coming in contact with hot furnace bath caused an explosion resulting in damage to roof. By providing drain holes this hazard has been eliminated.

We have provided a covered scrap storage, which also removes the hazard of charging wet scrap into the furnace. This covered storage building is more than paying the investment charge, and is considered a good investment and safety measure.

Our furnaces are tapped from the spout side of furnace into crane ladles from a swinging platform, well guarded, allowing men tapping out perfect freedom of action and protection from accident.

Inspection Periods Are Regular

All cranes are inspected mechanically and electrically each day, and each week every foot of cable is cleaned with kerosene and careful inspection made. Ladle bails are of the detachable type, and they too are inspected systematically, together with the ladle trunnions.

We are obliged to transfer considerable portion of the steel from one building to another, which is done on a specially constructed ladle car of standard gage, with a storage battery transfer car as a moving agent. In transferring ladles of molten metal about the shop, it is always customary to have someone precede the crane, warning those who may be in the path of travel. Ladles are carried just as close to the floor as possible.

In pouring steel all men working about the pouring floor are provided with, and use special glasses. The upper portion of the lenses are blue with plain glass in the lower portion. This combination allows clear vision for the men to move about safely, and the upper section provides protection from the intense light of the hot metal, and saves many eye injuries from flying sparks.

We are firm believers that the utmost rigidity is essential in ladle shells, especially in large capacity ladles used for steel, which prevents cracking of lining bricks and distortion and affects the stopper mechanism. There is evidence that this point is sometimes overlooked.

Ladle Slides—Gearing, stopper rods, and accessories; graphite stoppers, sleeves and nozzles, are each in themselves vital factors in the safe handling of molten metal. Great care is given our ladle stoppers and heat before use. Stopper rods are dried out for at least ten days prior to using. It seems to the writer that too much attention to the details is impossible when we consider the important part the stopper mechanism plays in controlling the pouring of large masses of molten steel.

About fifteen tons of molten metal are handled daily, all going into light work, which is hand poured.

Each moulder is provided with a pair of goggles, which he religiously uses when handling molten metal.

From the stock room each moulder secures daily a pair of standard leggings, and returns them when through for the day. By this system all leggings are inspected daily and kept in good condition and only those safe for use are given out. Daily inspection of safety shoes worn by the pouring gang is made also.

During the casting period the safety inspector is found usually in front of the spout, and the dangerous practice, which was followed in days gone by of moulders cutting into the stream to fill hand ladles, has gone, and one of the greatest hazards removed. By supplying metal to hand ladles from the reservoir ladle, a safe and sane method has superseded the dangerous one, and lost time accidents reduced to the minimum.

The mere presence of the safety inspector on the job at times deters some of the more anxious ones from breaking this rule.

Cast iron overiron troughs are provided and conveniently located, eliminating the dangerous practice of pouring surplus metal on the floor for some one to walk into.

It is our custom to maintain straight aisles and keep all gangways

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Abstract of paper presented at fourteenth annual congress of National Safety Council, Cleveland, Sept. 30. The author is general foundry and patternshop superintendent, River works, General Electric Co., West Lynn, Mass.

Chromium Plating of Steel

Chromic Acid-Chromic Sulphate Bath Solutions Give Best Results—Cast Chromium Used for Anodes—Chromium Does Not Cement at Ordinary Case Hardening Temperatures

THE ever-increasing use of steels of the "stainless" type and of alloys of iron, carbon and chromium in general, as materials resistant to a large variety of corrosive media, including the atmosphere and natural waters, has led to the development of many varieties of chromium iron and steels. It has long been realized that articles plated with chromium probably would be resistant to corrosion and would have other desirable properties, including a silver-like luster when buffed. A review of the literature might lead one to suppose that the problem of chromium plating had in general been solved successfully, yet at the present time such plating is not extensively practiced commercially.

Salkover has investigated many different baths and concludes saying: "Uniformly good results can be obtained from a bath containing 30 per cent CrO_3 and 1 per cent $Cr_2(SO_4)_3$. The CrO_3 content may become considerably impoverished without harmful results, also a somewhat higher concentration of the sulphate is permissible. Most other chromium salts do not give results at all comparable in quality to those obtained by the use of the chromic acid-chromic sulphate solutions."

Binding Agent Is Needed

Investigations of baths have also been made by Rengering, using brass sheets and copper "electrotypes" as cathodes, and anodes of lead and chromium. He concluded that "there is no diffierence in the quality of the plates produced by baths using lead anodes and those using chromium anodes . . . that heavy deposits of pure chromium cannot be plated without granulation taking place, that chromium deposits heavier than flash coats must be alloyed with a binding agent to prevent granulation, and that nickel is a suitable binding agent for use in depositing heavy plates (0.001 inch or more) of chromium."

There is no question but that on electrolyzing the chromic acid-sulphate bath, which has been found to be the most suitable for use, the temperature rises appreciably. Much better results are obtained if the plating bath be cooled in ice water. The writer employed the method of Schwartz, except that the plating bath was kept cool in running water. Cooling by means of an ice bath was not required for the purpose for which the plated specimens were desired, although some cooling was necessary.

Measures Depth of Plating

For anodes the writer used either cast chromium in fairly large pieces, 3.8x2.5x10 centimeters (1.5x1.0x4.0 inches), or a number of smaller pieces hung in a basket made of aluminum wire. The pieces of mild steel used were cylinders approximately 5.1 centimeters (2 inches) long by 12.7 millimeters (0.5 inch) in diameter. A number was stamped in one end, and an aluminum or copper wire was attached to the other, either by means of solder in the case of copper, or by drilling a small hole, inserting the aluminum wire, and then swaging the steel around the wire. The wires later served as a means of hanging the specimens in corrosion tests.

The bath used consisted of 3 grams of chromium sulphate, 245 grams of chromic acid, and 5 cubic centimeters of concentrated H_2SO_4 per liter of water, which is essentially Sargent's solution. Current density employed was 37.7 amperes per square decimeter (350 amperes per square foot). The steel specimens were hung from a bus bar in the middle of the battery jar, and two anodes were used. The temperature was not allow to exceed 24 degrees Cent. The weight of chromium deposited over the area of each test piece (average area 22.8 square inches) varied, for a plating time of one hour, from 0.2 to 0.3 gram. The probable depth of plate then varied from 0.00127 to 0.00193 centimeters (0.00049 to 0.00072 inches), assuming the plated chromium to have a specific gravity of 6.9 inches. Microscopic examination of a cross section confirmed this depth of plate approximately.

Among other investigators of this type of plating, Kelley describes the process of chromizing, and gives the following conditions as necessary for the production of a chromized surface: (1) Chromium of at least 95 per cent purity; (2) powdered Al_2O_3 as a diluting agent; (3) pure hydrogen free from moisture and oxygen, and (4) a furnace that will operate at 1300 degrees Cent. or higher in an atmosphere of hydrogen. He further notes that the chromium must be in intimate contact with the iron, and that the iron or steel must have a low carbon content. Kelley found that chromized iron was resistant to corrosion (salt spray test) and to the attack of HNO_3, but not to the attack of H_2SO_4 and HCl; also that the chromized surface is soft but may be case hardened, yet if case hardened the material is less resistant to corrosion.

Tests Cementation of Plating

The writer also undertook to determine whether a process of plating and heat treating could be worked out, which would furnish a steel with a surface of iron high in chromium content and hard enough to stand wear, and still be resistant to corrosion. Three general lines of procedure were employed, as follows:

1. Plate the specimen with chromium and then attempt to case harden through the chromium, followed by suitable heat treatment (Series A).
2. Case harden, then plate with chromium and then heat treat (Series B).
3. Plate with chromium, heat treat, and case harden (Series C).

The steel tested was 0.18 per cent carbon, and the specimens were 5 centimeters long by 1.27 centimeters in diameter (2 inches by 0.5 inch). Specimen surfaces were freed from scale but not brilliantly polished. Only relatively quick, inexpensive, commercial methods of treatment were employed.

The experiments in the accompanying table indicate that none of the samples showed sufficient hardness and evidence of chromium diffusion to warrant preparing samples for a corrosion test. These tests were made using gas furnaces, and constant checks on change of hardness were made with the scleroscope, as noted in the table.

Similar tests were also run in a small electric furnace where a slightly higher temperature was obtained, the period being extended to six hours to

From a paper presented before the American Electrochemical society at Chattanooga, Tenn., Sept. 24-26, 1925. The author is instructor in metallurgy, University of Cincinnati, Cincinnati.

allow a better chance for diffusion. In no case did the hardness of the specimen materially increase, where the specimen had been chromium plated before either before heat treatment for diffusion or case hardening treatments.

This leads to the conclusion that at ordinary case hardening temperatures, chromium as plated does not absorb carbon, that is, it is not cemented, to any appreciable extent. Cast chromium can be readily made to take up carbon at the ordinary case hardening temperature. Small pieces of cast chromium were weighed, packed in carbonizing material and case hardened at about 900 degrees Cent. for one hour. They showed a gain in weight of 0.25 per cent and were insoluble in any ordinary mineral acid or combination of acids.

Completes New Railroad

(*Concluded from Page* 894)

were required for the fills. This yardage was secured by the use of waste material such as slate, rubbish and slag from the company's mines and plants. The deepest fill is 50 feet high. Inasmuch as the rubbish used for filling was received in 50 and 70-ton standard railroad cars the dump trestles were more substantially constructed than is usual. The high line trestle required 337,562 lineal feet or over 61 miles of pine poles, which were cut from the company's properties.

The finished roadway and track follows in every respect the best American railway practice, as may be seen from the accompanying photographs. The minimum width of the roadway at subgrade is 24 feet through cuts and 20 feet on fills. The track is laid upon 12 inches of crushed slag ballast. One hundred pound section rail, rolled at the Ensley mills, is laid upon creosoted ties, each of which is protected by a 7½ x 10-inch tie plate from the Fairfield tie plate mill.

Bureau Makes More Tests in 1925

Almost every industry and branch of the government has been served by the bureau of standards, Washington, which recently announced that during the fiscal year ending June 30, 1925, it had completed 173,261 tests. This represents a considerable increase over the 115,729 tests completed in 1923, and also over the 135,852 tests in 1924. The fee value of the past year's work is $547,543.35, which is also an increase over other years.

To Open Engineering Night School

"Designing for Foundry Practice," is the title of one of the courses to be offered by the John Huntington Polytechnic institute at its ninth season of free evening classes given for men employed in industries of Cleveland. In preparing its curriculum, the institute has this year received the co-operation of the Cleveland Engineering society, which has been endeavoring to ascertain from its members what courses would be of greatest service to those attending. Registration for these classes opened on Oct. 1, while instruction begins Oct. 19.

The purpose of the foundry course is to correlate the casting design, pattern construction, and the foundry molding. J. D. Wise, Osborn Mfg. Co., has been secured to present the course. A course in the graphical presentation of statistics will be conducted by D. C. Elliott of the Federal Reserve bank. The fundamental principles of statistical work and the study of graphs and their proper uses will be covered. The work in engineering salesmanship, as presented by A. H. Carmine, Longwood high school, is devoted to instruction in the psychology of selling. In addition to the contract law under A. L. Cardis, Spencerian school, R. P. Wallis, Lundoff-Bicknell Co., will conduct the course in modern building construction, which covers the co-ordination of trade layouts and the problems concerned.

Data on the Chromium Plating, Heat Treating and Case Hardening of Mild Steel

Abbreviations: hr. = hours; q = quenched; c. w. f. = cooled with furnace; an. = annealed at temperature of 950-1050° C.; scl. = average sclero-scope reading; oil q. = quench in oil at 250° C.

Series A—Sequence of Operations:

(1) plate; (2) case harden; (3) heat treat.

Sample No.	Time of Plating hr.	Time and Method of Case Hardening	Heat Treatment	Final Sclero-scope Hardness	Remarks
12	1	1 hr., pack	Cooled with furnace	23	
13	1	1 hr., pack	H_2O quenched	37	(1)
14	1	2 hr., pack	1 hr. an., air cool, scl. 22. ½ hr. at 950° C., and H_2O quenched.	37	(2)
15	1	2 hr., pack	2 hr. an., air cool, scl. 25, hr. an. and H_2O quenched	30	(3)
17	1	1 hr., pack	2 hr. an., in Pb bath at 620° C., cooled with furnace	20	(4)
18	1	1 hr., pack	3 hr. an. in Pb bath at 620° C., cooled in gas fur. from 620° C.	25	(4)
121	1	½ hr., cyanide	1 hr. an., and oil q. scl. 25 surface good, ½ hr. an. and H_2O quenched	27	(5)

Series B—Sequence of Operations:

(1) case harden; (2) plate; (3) heat treat.

Sample No.	Time of Plating hr.	Time and Method of Case Hardening	Heat Treatment	Final Sclero-scope Hardness	Remarks
110	1	1 hr., pack	1 hr. an., cooled with furnace	22	(3)
111	1	1 hr., pack	2 hr. an., cooled with furnace	19	(3)
112	2	1 hr., pack	2 hr. an., cooled with furnace	20	(3)
113	1	2 hr., pack	1 hr. an., c. w. f. scl. 35, good surface. ½ hr. an., H_2O q	67	(6)
114	2	1 hr., pack	1 hr. an., in Pb bath at 620° C., cooled in gas fur. from 620° C.	25	(4)
122	1	½ hr., cyanide	1 hr. an., oil q. scl. 25, surface fair, ½ hr. an., and H_2O q	35	(7)

Series C—Sequence of Operations:

(1) plate; (2) heat treat; (3) case harden.

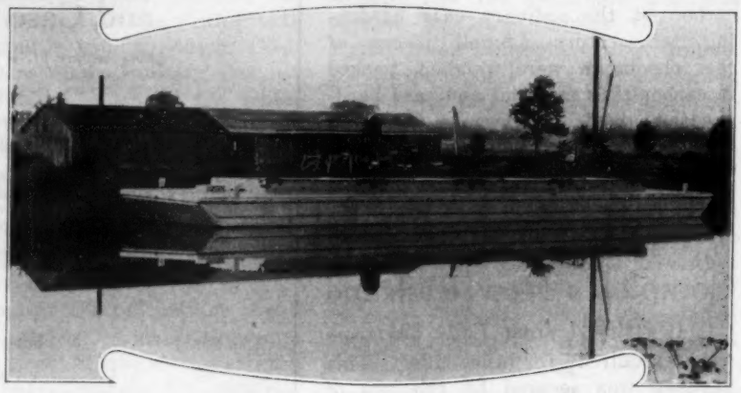
Sample No.	Time of Plating hr.	Time and Method of Case Hardening	Heat Treatment	Final Sclero-scope Hardness	Remarks
16	1	None	1 hr. an., cooled with furnace	30	(3)
116	1	1 hr., pack c.w.f.	1 hr. an., air cool, scl. 20	32	(8)
117	2	1 hr., pack c.w.f.	2 hr. an., air cool, scl. 20	35	(8)
118	1	2 hr., pack c.w.f.	1 hr. an., air cool, scl. 20	35	(1)
119	1	2 hr., pack and H_2O q	2 hr. an., air cool	22	(3)
123	1	1 hr., pack air cool, 1 hr. an., and oil q.	1 hr. an., air cool, scl. 20	20	(7)

REMARKS: (1) Slight exfoliation. (2) Some peeling. (3) Bad exfoliation. (4) Surface blister. (5) Surface fair, but no evidence of Cr. (6) Regular case hardened structure, but plate not continuous. (7) Fair surface. (8) Some scaling.

Hulls Built of Steel Channels Prove Capable in Service

This Type of Construction Affords a Maximum Deadweight Capacity on a Minimum Draft — Flanges of Channels Form Girders Which Offer Resistance to Buckling

By W. G. Bartenfeld



Channel steel hopper dump scow of tunnel type for the State of New York—Capacity 125 cubic yards

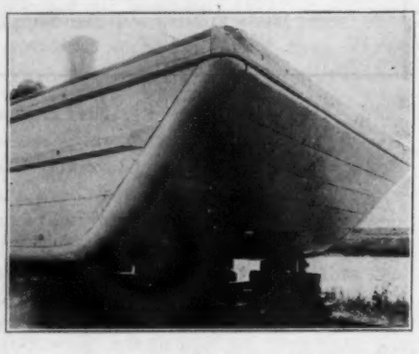
THE Channel Steel Barge Co., Rome, N. Y., is the pioneer in the development of the channel steel system of hull construction, patented by Louis Henley, and this company has up to the present time turned out four different types of hulls, under this system.

The first channel steel hull constructed was completed in 1922, and this vessel was a 500-ton hopper sand barge, 116 feet long, 22 feet beam and 10 feet 6 inches molded depth. This first hull, however, was not constructed entirely of steel channels, as a 6-inch piece of yellow pine planking was placed between each strake of channel, and the fastening bolts were run through the wood planking and flanges of the channels. Before this hull was launched, it was allowed to rest on just the end blockings, 95 feet between the blocks, for 24 hours, and it was also balanced on just the midship block.

No signs of deflection or straining were noticed in either test. This first hull, a combination of steel channels and wood construction, proved so successful that soon after its completion and trials the state of New York placed an order with the Channel Steel Barge Co. for an all steel hopper dump scow of tunnel type, and of 125-cubic yard capacity. This scow is 100 feet long, 22 feet beam and 5 feet 6 inches depth. The channels used in the dump scow are 15 inches in width by 33.9 pounds per foot and of structural steel section. Those used in the first hull were 12 inches by 20.7 pounds per foot structural steel channels. Both the sand barge and the dump scow have been given hard usage and each hull has lived up to expectations.

A Variety of Hulls Built

The next hull to be constructed under the channel system was a small ferry boat 40 feet by 16 feet by 5 feet. This was also constructed entirely of structural steel channels of 12 inches by 20.7 pounds per foot scantlings. This boat has been in service for about four months, and the owners state that she has given excellent service. The latest and fourth hull turned out under this system is a deck lighter for the United States war department, corps of engineers. It is 100 feet in over all length, 30 feet beam, and 6 foot molded depth, and has a 1 foot sheer at both ends. There is one watertight centerline bulkhead, and four transverse watertight bulkheads. This lighter is made entirely of 12 inches by 20.7 pounds per foot structural steel channels, with the exception of those used in the bilge, which are 15 inches by 33.9 pounds per foot structural steel channels. This lighter has recently been placed in commission on the Niagara river.



END VIEW OF HOPPER DUMP SCOW SHOWING TUNNEL AND CHANNEL STRAKES

One of the outstanding features of these hulls is that no riveting passes through the outer shell. The decks, sides, bottom, and ends of the outer shell are as smooth as a plastered wall. This will of course reduce the hull resistance to a small extent, will render the hull less susceptible to damage than with the usual construction, as there are no butt straps, and because the flanges of the channels on the inner shell form longitudinal and transverse girders which give tremendous stiffness and offer great resistance to buckling. The absence of riveting through the outer shell of course makes the hull less susceptible to leakage, and no rivets can be started by the hull rubbing against docks or concrete walls. The corners of the hulls at the deck and bilge are rounded and formed by bending the webs of the connecting channels to any desired arc. This method gives a little added strength, permits the construction to be car-

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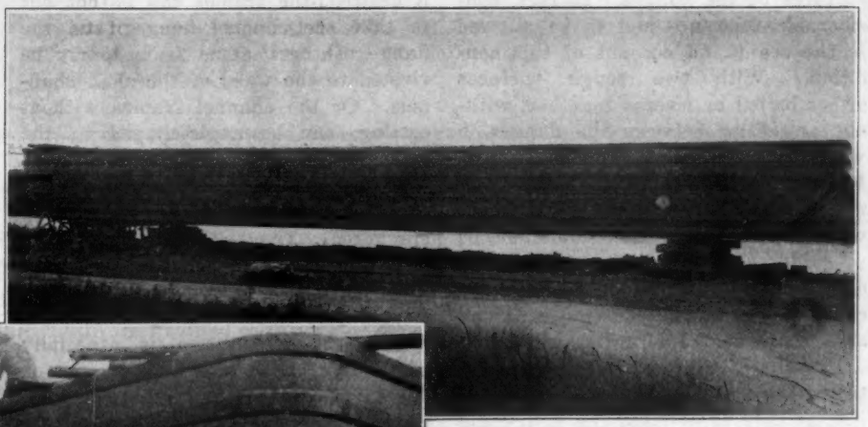
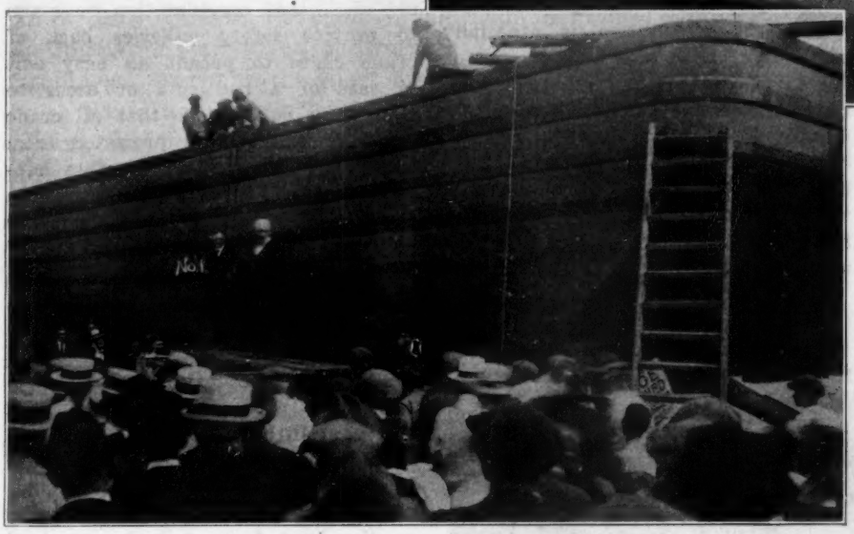
ried unbroken throughout the entire cross section of the hull, and the various degrees of arc to which the corner channels can be curved permits any beam or depth of hull.

Another outstanding advantage of this system is that the flanges of the channels can be either bolted or riveted together. It has been desirable, particularly in small hulls, to use bolts to tie the flanges together, because it



500-TON HOPPER SAND BARGE SUPPORTED ON END BLOCKS 95 FEET APART WITHOUT SIGNS OF DEFLECTION OR STRAIN



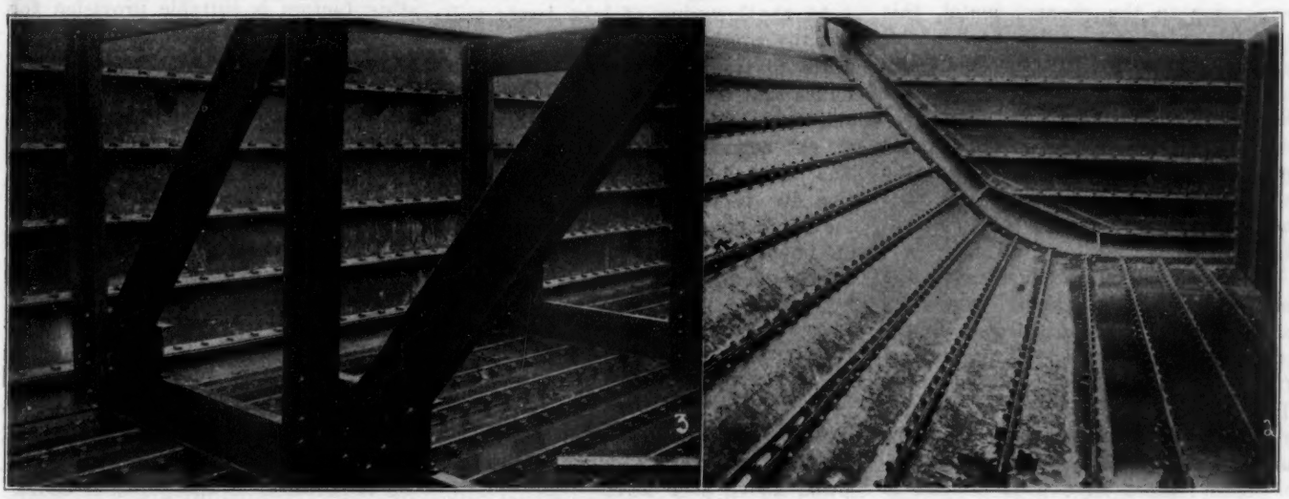
500 TONS HOPPER BOTTOM SAND BARGE—116 FEET LONG BY 22 FEET BEAM BY 10 FEET 6 INCHES DEEP. CONSTRUCTED OF ALTERNATE STRAKES OF 12-INCH STEEL CHANNELS AND 6-INCH YELLOW PINE

can be done more cheaply than riveting, as unskilled labor can be used, and no expensive equipment is required. Bolting is also desirable when a small hull is to be fabricated and shipped knocked down into remote regions. The bolts are also an advantage, if an owner desires to construct such a hull himself, in a minimum amount of time and expense.

All four of the hulls constructed to date have the channel flanges bolted together. The bolt spacing in the first hull constructed was 8 inches between centers and on the last three hulls 6 inches between centers. As compared with a riveted job where the pitch is generally 3½ diameters, there is practically only one-half the amount of punching and bolting in this system. However, in large hulls rivets will be used, and the pitch will be governed by the type of hull, and the work that the vessel is expected to perform.

Considerable experimental work has been carried out by the company in perfecting the seams, formed by the channel flanges. Flanges and seams have been set up in many ways: steel against steel, and with wood, tar paper, cotton felt and other non-metallic fillers between the flanges. The best results were obtained by using a thin strip of cotton felt in the seams, and this method will be carried out in all new construction work. Tar paper also showed up well between the seams, but it did not have as much resiliency as the cotton felt. As tar paper is used extensively in modern plate vessel construction, it can be used equally as well in the channel system. In fact all the four hulls completed have the strip of cotton felt filler in the seams between faying surfaces. The reasons why this method was chosen may be enumerated at follows:

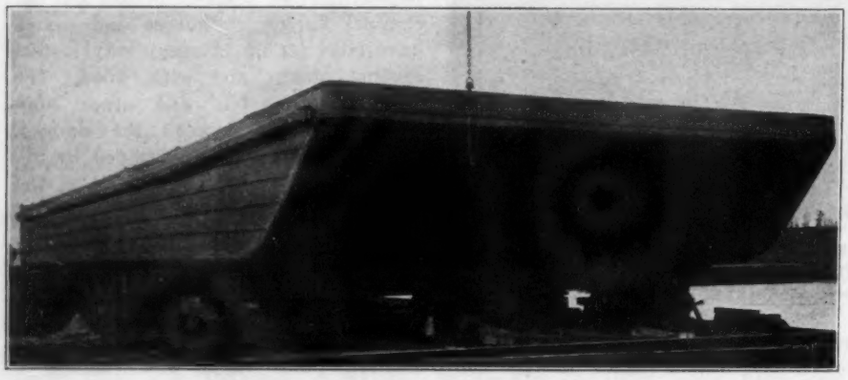
The flanges of the channels do not run smooth and even, and there is considerable roughness on the faying



LEFT—CHANNEL CONSTRUCTION OF SIDES, BOTTOM AND FRAME TRUSSING AT 9-FOOT SPACING WITH NO INTERMEDIATE FRAMES. RIGHT—INSIDE END VIEW U. S. ENGINEERS LIGHTER, SHOWING METHOD OF CONNECTING SIDE TO BOTTOM AND END WITH NO RIVETS THROUGH OUTER SHELL

surfaces of the flanges. In fact, considerable tolerance had to be allowed in the seams, on account of this condition. With two rough surfaces either bolted or riveted together, without any filler between the flanges, a watertight job was not obtained. Pressing some of the rough spots out, made a little difference, but there were a great many that could not be pressed out. The time and work required to do this extra pressing was considerable, and added no small amount to the construction costs.

By using a thin cotton felt strip between the flanges, any of the channels just as they came from the mill, could be used and a watertight job could be assured with either bolts or rivets. It was also found that the rivet pitch could be increased twice that required for a steel to steel job where the pitch was 3½ diameters and still



ALL STEEL CHANNEL DECK LIGHTER FOR U. S. ENGINEERS, COMPLETED AT ROME, N. Y., JUNE, 1925. NOTE SHEER AT ENDS.

secure an absolutely watertight job. This of course eliminates one-half of the punching and riveting otherwise required, and of course reduces the punching and riveting costs in direct proportion.

Should there be any spring in the hull, or an unequal contraction or expansion in the channel metal, this thin layer of felt, which has considerable resiliency, will automatically expand to meet this condition, and keep the seam watertight.

By using the thin felt layer or tar paper, no chance is taken on the seams not being watertight, and thus a far greater factor of safety is obtained.

The spacing of the frames in the hulls already constructed, has been about 9 feet and has proven ample under all conditions. Any desired frame spacing however can be used. The frames have all been of channel steel and of the same size as those used in the shell.

These frames have been clipped to the channel flanges forming the inner shell girders, to eliminate any riveting through the outer shell. However, if desired, the frames can be cut out to take the channel flanges, and the flange of the channel frames may be riveted to the webs of the shell channels. Or the channel frames without cutting, can be angle-clipped to the webs of the shell channels.

No butt straps have been used, and the few channel butts have been well staggered. The welding of the butts has proven very satisfactory. Very little bolting up is required even in a riveted job, under this system.

This channel system is especially adapted for tank tops and side tanks, due to its greater buckling resistance, watertightness, and the minimum number of rivets which would come in contact with heavy clam shells. Such a tank system placed in an old hull, will also add additional strength to the vessel. The construction is adaptable for any type of cargo carrier. The advantages of the channel steel system are: greater strength with larger dead-weight capacity; lower construction costs and less depreciation; adaptability for easy fabrication and for shipments in knocked down condition; stronger and cheaper side tanks and tank tops.

As the lowering of lake levels still steadily continues it is of vital importance to transportation on the Great Lakes that measures be taken to build ships of the greatest possible deadweight capacity on a minimum draft. The channel steel system of construction due to the saving in weight for the same strength of hull, represents an important step in the solution of this problem.

Reducing Accidents in the Foundry

(*Concluded from Page* 895)

clean. No curbings or rails are allowed above floor level.

Crane ladles are of the geared tilting type. One of our largest foundries recently has changed most of the old worm gears for the improved spur gear type, which insures the ladle remaining in a given position, and is tilted easily for pouring. A common, dangerous practice of carrying the crane ladle containing molten metal about the shop in other than a vertical position should be guarded against.

A suggestion recently advanced which has much merit, is that in designing new foundries and remodeling old ones, that consideration be given to provide safety galleries back of crane cages to permit an easy exit in case of a bad spill or excessive heat from floor. Also that all crane cages should be well protected from a spill of iron or steel. It often happens that stoppers become frozen in the nozzle. A variety of methods are employed to raise the stopper out of nozzle, most of which are attended with more or less danger from molten metal.

Good flask equipment with proper flask joints should be maintained. The majority of our flasks are metal, and very little trouble is experienced from runouts. Most foundries do have some wooden flasks. One of our foundries provides a one inch thick strip on the joint face of both cope and drag, and replace when needed at little expense, insuring greater safety.

Slag spouts on cupolas should be equipped with suitable shields to prevent blowing sparks and slag on to operators or passersby.

Blast pipe from the blowers to cupolas should be equipped with suitable back pressure safety gates so that there is no danger of carrying flame and fire into the blowers causing explosions of gases.

One of the indirect means of safely handling molten metal is stabilization of employes. One of the contributing factors is suitable provision for the health and convenience of employes in wash rooms, toilets and locker rooms, shower baths with heating facilities that they may be used in winter as well as in summer.

Where Americanization work is carried on, the writer suggests that some of the lessons in English be taken from the plant safety slogans and notices as a further means of creating interest and education in safety work.

When we analyze the accidents in plants well guarded mechanically, it is generally conceded that the major portion of accidents are due to personal carelessness, which emphasizes the importance of the personal educational work so necessary if we are to maintain a low level of accident records.

Editorials

They Work 13 Months a Year

MACHINE tool builders attending the twenty-fourth convention in Washington last week were given a fine opportunity to see and know how certain government bureaus are assisting American manufacturers in solving their problems. Perhaps the most striking revelations were contained in the statements of Dr. Julius Klein, director of the bureau of foreign and domestic commerce.

Doctor Klein showed that the service of the bureau to industry has increased 70 per cent during the past year, while the appropriation for operating the bureau was only 7 per cent higher. The greater volume of work was accomplished with this slight increase of expenditure by driving the staff to the limit. Overtime amounting to an average of 27 days per year for each employe is shown by the records.

This heavy strain seems justified by the results obtained. Voluntary reports from 173 manufacturers indicate that the bureau's work was responsible for obtaining business amounting to $72,000,000 for American exporters in the last year. This means that the known results, perhaps representing only 10 per cent of the total benefits derived, are 24 times the cost of maintaining the bureau.

In view of this excellent return of 2400 per cent on the taxpayers' money, it is nothing more than good business and public policy that the department of commerce be given more funds to operate its various bureaus. Certainly it should have enough financial resources to permit its staff to work 12 instead of 13 months a year. Considering how industry is benefited, American manufacturers should throw their influence toward recognition by congress of the wonderful work of this department.

Plant Activities Are Measured

AN INTERESTING chart compiled by the National Industrial Conference board showing the production and capacity of manufacturing industries in the United States for the years 1921 and 1923, appears in this week's issue of the BUSINESS TREND. These comparisons are made possible by the fact that in 1921 the bureau of the census for the first time requested manufacturing establishments to estimate the percentage their actual output base to maximum possible output.

Similar data were collected by the 1923 census. The severity of the depression in 1921 is shown by the fact that the actual output of manufacturers during the year was valued at $42,318,000,000 or only 57.1 per cent of the potential output of $74,124,000,000. During that year the motor vehicle production was producing at only 43.1 per cent of its maximum, a record which was almost neck and neck with that of steelworks and rolling mills, the output of which was valued at 43.3 per cent. Foundry and machine shop producers likewise were depressed with an output of 44.6 per cent.

During 1923 there was a marked improvement. The maximum possible value of the output for that year was $83,764,000,000 and of the actual production, $60,106,000,000 or 71.8 per cent. In that year motor vehicles climbed to 74.9 per cent, steel works and rolling mills to 74.8 per cent and foundry and machine shop products to 69.8 per cent. Blast furnaces showed an output of 55.4 per cent.

The totals refer to dollar value of output and for this reason the presentation does not give a strictly correct view of the actual physical operations during these years. In 1921 prices were severely depressed while in 1923 prices had advanced substantially. The survey, however, sets forth the sharp fluctuations to which industry, as a whole, has been subject in recent years.

What the Safety Movement Means

THE "record of achievement in the metal industries" as presented to the National Safety council in convention in Cleveland last week was proof of the industries' earnest application to the problem of preventing accidents. The figures as submitted by Dr. L. W. Chaney, of the bureau of labor statistics, were impressive, showing continuous improvement in all the departments of manufacture.

This was a matter that could be readily charted, and expressed in terms of so many lives saved, and numbers of workmen saved from loss of eyes or limbs. What could not be stated so forcibly, however, though it is a very important feature of safety work in the metal industries, is the humanizing and broadening influence of all such activities.

The spirit of safety primarily is the instinct of self-preservation. The "first law of nature" implies self-interest, but it does not necessarily

mean selfishness. The safety spirit is doing more to overcome the spirit of selfishness than any other force in the iron and steel industry.

Safety work is teaching men to think not only of themselves, but their obligations to their fellow workers, and in that respect it is attaining a record that far surpasses in importance any other that may be summarized in figures.

Internal Injustice Needs Attention

AS THE American Federation of Labor starts on its annual convention at Atlantic City, the leaders see a great menace in the growing trend of members away from the federation into organizations where more freedom of individual effort is offered. The leaders of organized labor, therefore, view with alarm the inducements offered to employes by many industrial institutions to partake of group insurance benefits and similar arrangements whereby employes come into closer contact with their industries. Hence, they denounce these "industrial traps" as a yoke of servitude behind which employers entrench themselves to induce employes to discontinue their membership in unions.

It was not so long ago that union leaders were clamoring to share in such benefits that they now disclaim as institutions of servitude. The union man now sees he must follow a blind form of servitude to a leader who cares more for personal eminence than for the good of any industrial advancement or for the welfare of the industrial member. The federation is prepared to wage a campaign of propaganda against the "company unions." If it meets with success, the union organization must offer something better than the argument of servitude. In times of industrial activity it is becoming more difficult to induce employes to engage in a warfare in which the advantage of profit is entirely with the union leaders. One of the real problems of the federation is to conquer its own internal injustice.

Tool Builders Look To Steel

NO ONE who saw the elaborate exhibit of modern machine tools at the National Steel Exposition at Cleveland could fail to note the rapid strides that have been made in the years since the war. The industry's breathing spell has been well utilized in development work. It is also time to sound a warning to the manufacturers of small tools, equipment and steel. The machine tool industry is catching up with you!

When carbon steel tools were the last word a similar condition was encountered. It was met by the development of high speed steel and the doors were opened again to new designs for increased production.

The new era of rigid construction, greater speeds and feeds, ball bearings and efficient heat treatment has enabled machine tool builders to utilize the full capacity of the present high speed steel tools or modern grinding wheels. New developments in cutting tools are in order if machine tool progress is to continue.

What Our Readers Are Thinking

Has Curious Ideas on Free Speech

SENATOR BORAH is up in arms again. He is now in deep trouble over Saklatvala, the communist gentleman from England who is a member of parliament and whom Secretary Kellogg denied the right of admittance to this country. Mr. Saklatvala is very proud of his communism, and he is all for tearing down the union jack and setting up the red flag.

Under the immigration law passed by congress, this radical cannot enter, but Mr. Borah does not pay any attention to the fact that the officials at Ellis island would have turned him back if Secretary Kellogg had not prevented that humiliation by notifying him that it would be as well for him to stay at home.

According to Mr. Borah any "red" who announces his desires to destroy the particular government under which he is living is merely exercising the right of free speech, and, consequently, he must be given special treatment. Evidently Mr. Borah makes some distinction between the socialist who comes a-shouting and the radical who comes a-shooting. Usually, however, the gentleman who comes a-shouting is the one who incites others to come a-shooting while he remains comfortably in the background. Secretary Kellogg did just exactly what the people of the United States expected him to do which, of course, accounts for Mr. Borah's objection.

WILLIAM H. BARR,
President National Founders' Association in Letter to Members.

Eight Hours—and What of the Rest?

THE greater portion of those employed in the operation of this company now work only eight hours per day. They have, therefore, considerable spare time on their hands. This time is, of course, their own, and there is no disposition on the part of anyone to dictate how it should be occupied.

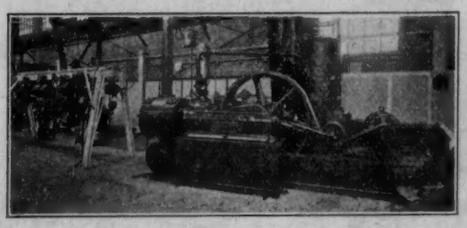
I would like to see more of our young people using their spare time to secure knowledge which will make them more valuable to our company by increasing their earning power and affoding them opportunity for advancement. My experience leads me to blieve that it is more difficult to secure good men for positions with high salaries than for others not so well paid. The better jobs, the more difficult it seems to get good men to fill them.—JAMES A. CAMPBELL, *President, Youngstown Sheet & Tube Co., in company's bulletin.*

The Reader's Page

Vol. LXXVII, No. 15 IRON TRADE REVIEW Oct. 8, 1925

Four Conventions Reported—With Thoroughness

FOURTEEN pages in this issue of IRON TRADE REVIEW are devoted to four conventions of importance in the iron and steel industry. The organizations that have convened within a week are the American Foundrymen's association, in Syracuse; National Machine Tool Builders' association, in Washington; the American Gear Manufacturers' association, in West Baden, Ind., and the National Safety congress, in Cleveland. The reports of all these conventions, and of exhibits, where held, have been written by staff representatives of IRON TRADE REVIEW. Seldom have so many meetings occurred in such a short space of time. That each has been "covered" thoroughly is evidence of the resourcefulness of this publication for service. Four pages are given to the safety council because practically the entire report pertains to representatives of the iron and steel industry.



Foundry Show Largest Since 1920.
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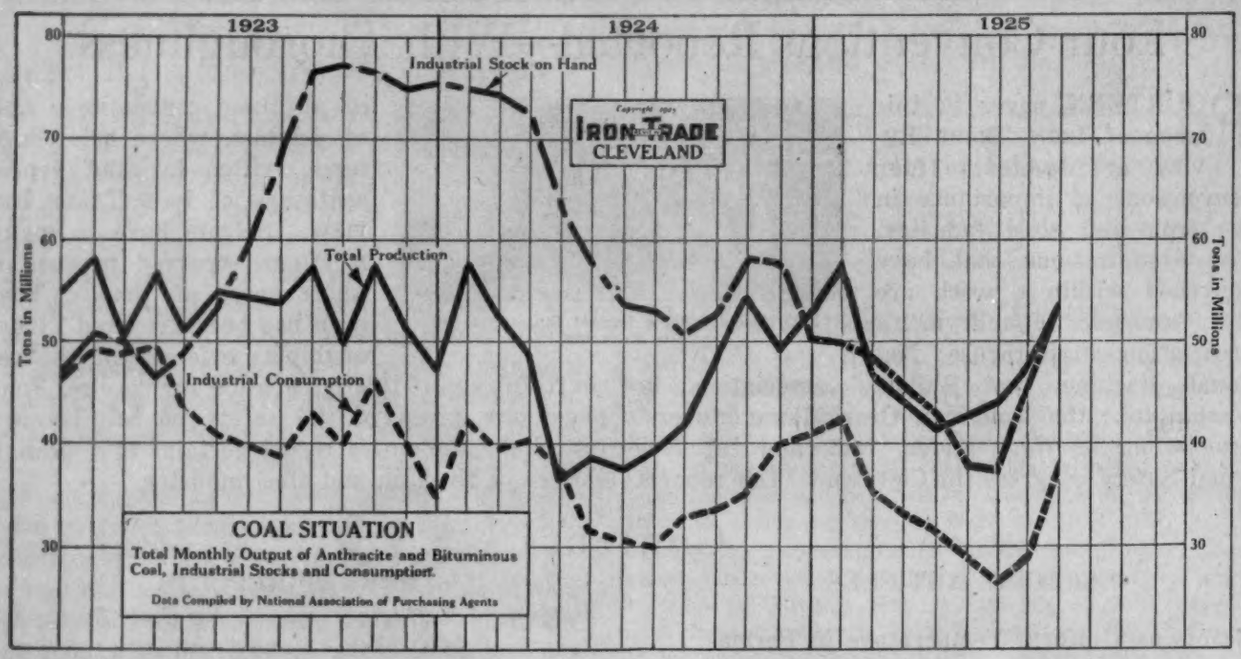
The Business Trend



Industrial Activities Broadening

By JOHN W. HILL, Financial Editor

TRADE and industrial activities steadily are broadening with the advance of the season. Numerous lines, recently in the grip of recession, have swung into a more lively pace. Among these are the iron and steel, textile, leather, farm implement and soft coal industries. Mail order sales are outstripping all previous records and freight movements are unparalleled for the season.

IMPROVEMENT in bituminous coal output has been marked. Mines are now yielding up coal in the greatest volume reported in months. In the week ended Sept. 26 production totaled 11,200,000 tons. This was the largest total for any week since January, and represented a gain of 50 per cent over the year's low point in April.

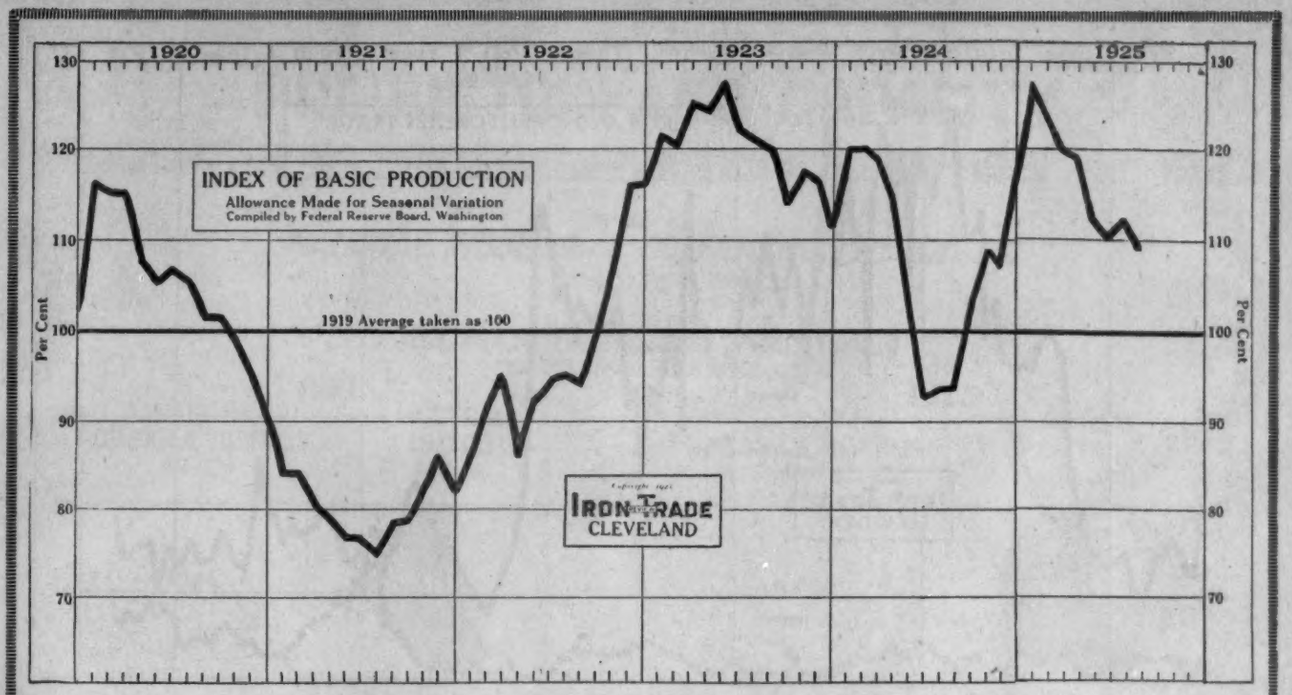
BETTERMENT in the soft coal industry has been due partly to the effect of the hard coal strike, and partly to improving business conditions. According to the National Association of Purchasing Agents, the consumption of coal by industry in August increased 22 per cent over that for July. The increase in coal stocks, pictured in the above chart, was in anticipation of the hard coal strike, which still persists.

WHILE much of the current improvement is in accordance with seasonal expectations these also include the prospect of some curtailment of the unmatched building boom and of automobile production. With respect to the construction boom, evidence is growing that it is being overdone. This is significant because building has been the chief stimulant of business over the past two years or more.

WITHOUT other stimulants to take its place the prospect of a substantial decline in construction might occasion some concern. Fortunately, however, large purchases by the railroads and by the agricultural sections are in view. These may swell to sufficient volume to help offset any decrease which may appear for building.

ONE of the most interesting of recent events was the reduction in the discount rate of the Bank of England. This came at a time when an advance in the New York federal reserve rediscount rate was being generally predicted. It is now believed that such an advance may be indefinitely postponed, which means that money is unlikely to tighten as rapidly as appeared probable a few weeks ago.

The Business Trend

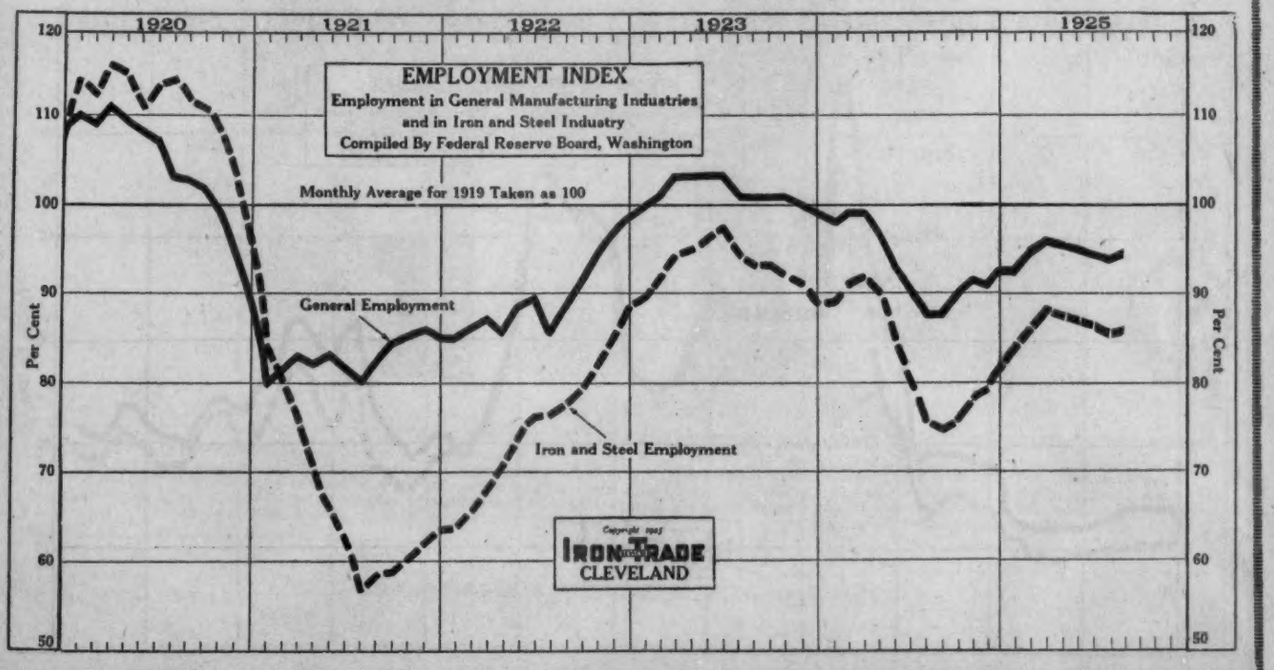


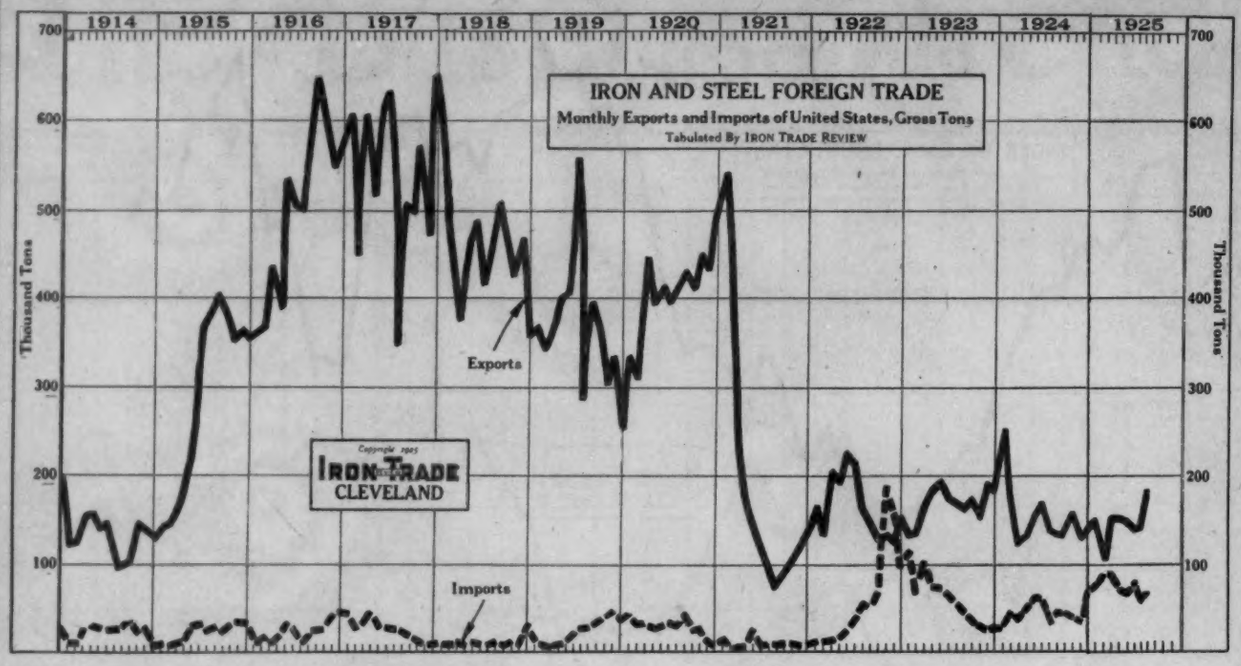
Basic Output

PRODUCTION of basic industries receded in August by about 4 per cent below the level in July. The index for the month stood at 109 per cent of the 1919 average compared with 113 per cent in July and 94 per cent in August, 1924. The federal reserve board which compiles the index, adjusts the number for seasonal variation. The August index was the lowest for the year but it was 15 per cent higher than in August, 1924. From present indications production will continue to show a higher trend.

Employment Index

REFLECTING the expansion of trade and industry the employment of factory workers in August showed an increase over July. The index compiled by the federal reserve board stood at 93.9 per cent of the 1919 average compared with 93.1 per cent in July and 89.5 in August, 1924. Iron and steel employment increased also, standing in August at 85.4 per cent of the 1919 average against 84.9 per cent in July and 78.9 per cent in August, 1924.



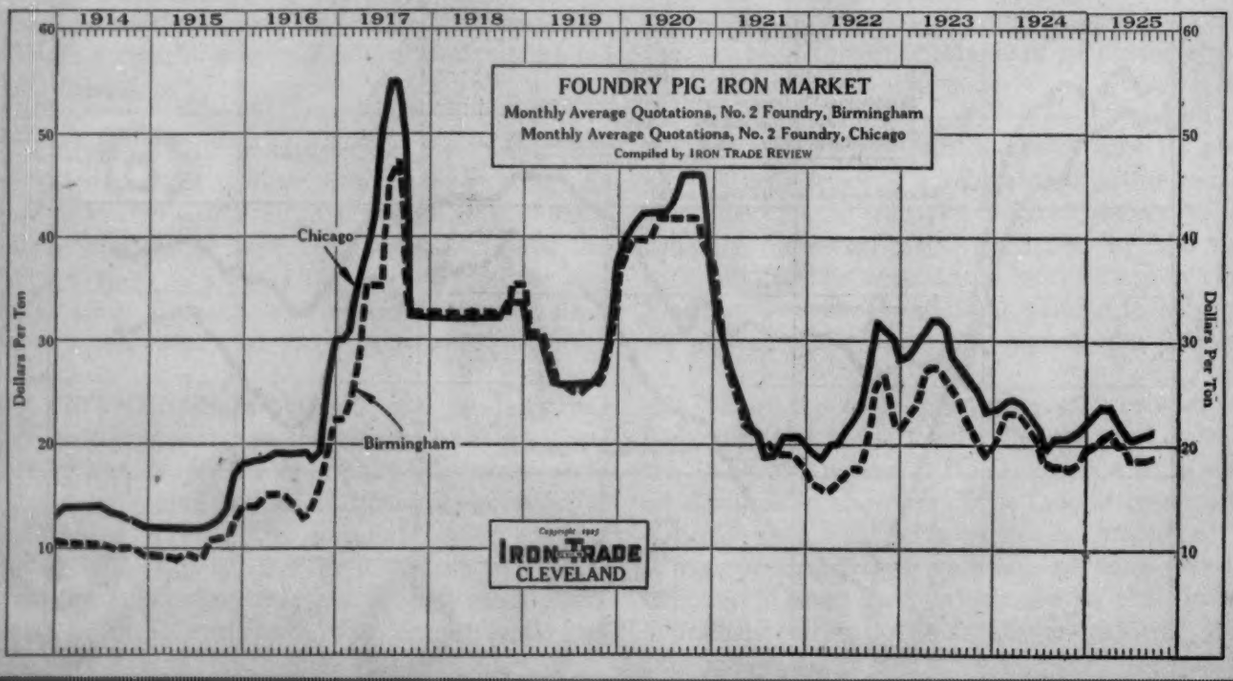

IRON AND STEEL FOREIGN TRADE
Monthly Exports and Imports of United States, Gross Tons
Tabulated By IRON TRADE REVIEW
Exports
Imports
Thousand Tons
1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925
700 600 500 400 300 200 100
IRON TRADE REVIEW
CLEVELAND

Steel Foreign Trade

EXPORTS of iron and steel products in August reached the highest point for any month since January, 1924. The total was 188,963 tons in August compared with 138,670 in July and 138,670 in August, 1924. Imports of iron and steel increased onl slightly, standing at 68,489 in August against 64,642 in July and 44,928 in August, 1924. Large gains in sales to foreign customers of the tubular goods and of steel rails accounted chiefly for the increase in exports.

Foundry Pig Iron

THE firm tendency of the foundry pig iron market has continued in recent weeks. Chicago No. 2 foundry which averaged $20.50 a ton in August reached an average of $21.50 a ton during September. Birmingham No. 2 averaged $18 a ton during August and the September average climbed to $18.50. During the past few days southern iron has made another advance. The strength is partly due to better demand and partly to the indirect effect of the hard coal strike.


FOUNDRY PIG IRON MARKET
Monthly Average Quotations, No. 2 Foundry, Birmingham
Monthly Average Quotations, No. 2 Foundry, Chicago
Compiled by IRON TRADE REVIEW
Chicago
Birmingham
Dollars Per Ton
1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925
60 50 40 30 20 10
IRON TRADE REVIEW
CLEVELAND

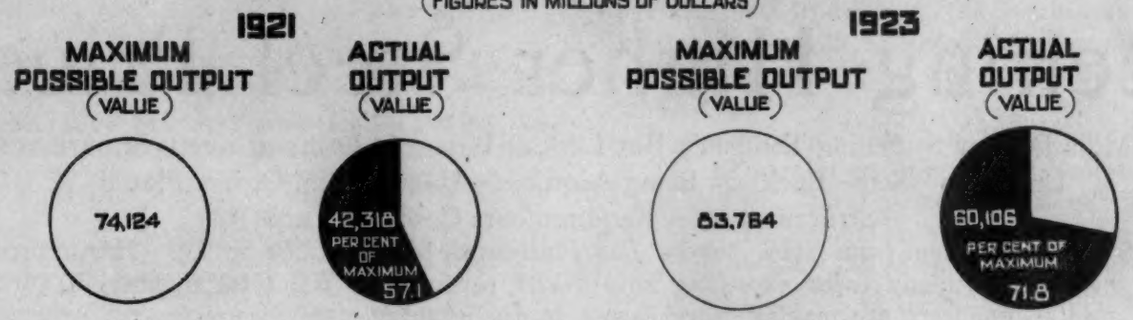
PRODUCTION AND CAPACITY

MANUFACTURING INDUSTRIES—UNITED STATES—1921 AND 1923

COPYRIGHTED BY
NATIONAL INDUSTRIAL CONFERENCE BOARD, INC.
NEW YORK CITY

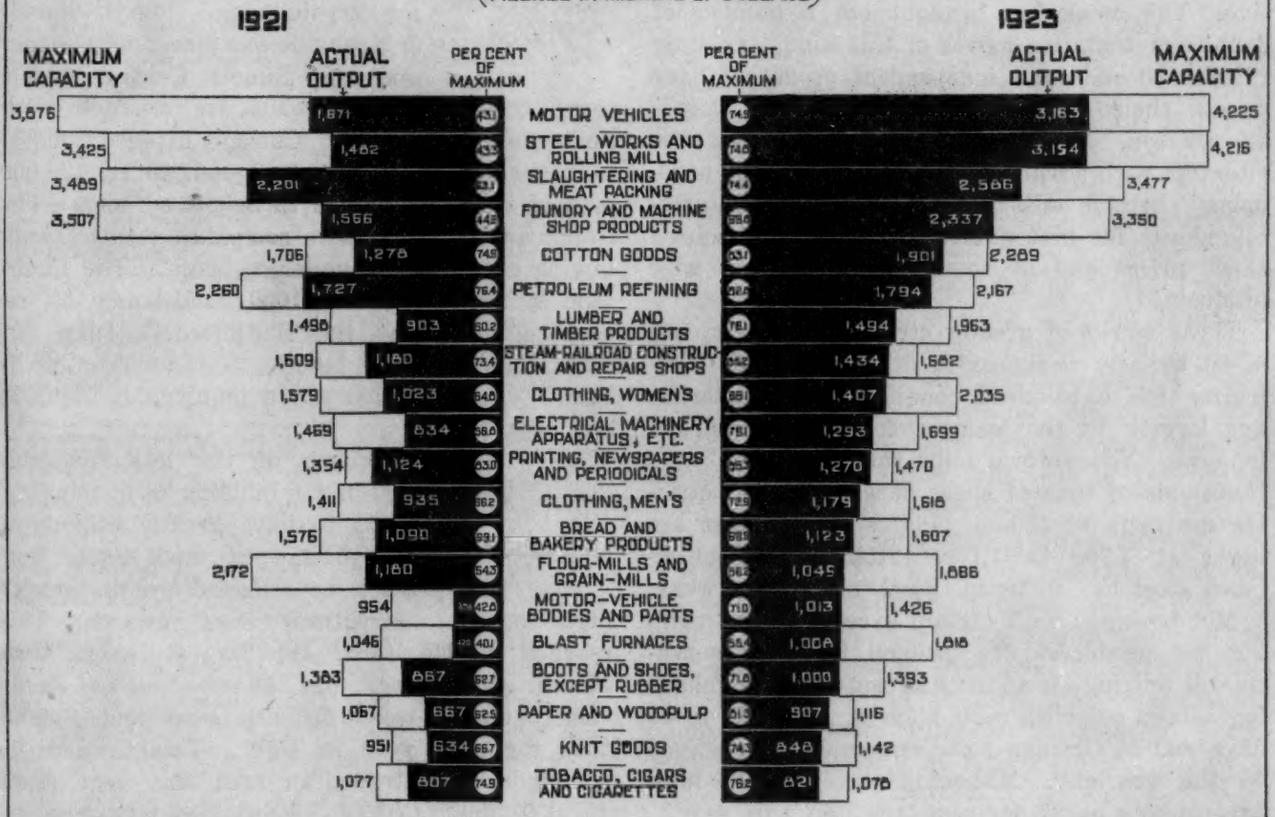
ALL MANUFACTURING INDUSTRIES

(FIGURES IN MILLIONS OF DOLLARS)



20 LEADING INDUSTRIES

(FIGURES IN MILLIONS OF DOLLARS)


1921
MAXIMUM CAPACITY
ACTUAL OUTPUT
PER CENT OF MAXIMUM
1923
PER CENT OF MAXIMUM
ACTUAL OUTPUT
MAXIMUM CAPACITY
3,876 1,671 43.0 MOTOR VEHICLES 74.9 3,163 4,225
3,425 1,482 43.3 STEEL WORKS AND ROLLING MILLS 74.0 3,154 4,216
3,489 2,201 63.1 SLAUGHTERING AND MEAT PACKING 74.4 2,586 3,477
3,507 1,566 44.6 FOUNDRY AND MACHINE SHOP PRODUCTS 68.0 2,337 3,350
1,706 1,278 74.9 COTTON GOODS 83.1 1,901 2,289
2,260 1,727 76.4 PETROLEUM REFINING 82.6 1,794 2,167
1,498 903 60.2 LUMBER AND TIMBER PRODUCTS 76.1 1,494 1,963
1,609 1,180 73.4 STEAM-RAILROAD CONSTRUCTION AND REPAIR SHOPS 84.2 1,434 1,682
1,579 1,023 64.0 CLOTHING, WOMEN'S 69.1 1,407 2,035
1,469 834 56.8 ELECTRICAL MACHINERY APPARATUS, ETC. 76.1 1,293 1,699
1,354 1,124 83.0 PRINTING, NEWSPAPERS AND PERIODICALS 92.3 1,270 1,470
1,411 935 66.2 CLOTHING, MEN'S 72.9 1,179 1,618
1,575 1,090 69.1 BREAD AND BAKERY PRODUCTS 68.9 1,123 1,607
2,172 1,180 54.3 FLOUR-MILLS AND GRAIN-MILLS 96.2 1,045 1,686
954 426.0 MOTOR-VEHICLE BODIES AND PARTS 71.0 1,013 1,426
1,046 420.1 BLAST FURNACES 56.4 1,008 1,818
1,383 867 62.7 BOOTS AND SHOES, EXCEPT RUBBER 71.0 1,000 1,393
1,067 667 62.9 PAPER AND WOODPULP 81.3 907 1,116
951 634 66.7 KNIT GOODS 74.3 848 1,142
1,077 807 74.9 TOBACCO, CIGARS AND CIGARETTES 78.2 821 1,076

In the 1921 Census of Manufactures, for the first time, each manufacturing establishment was requested to estimate the percentage which its actual output constituted of its maximum possible output. Similar data were collected in the 1923 Census.

The combined output of the 20 industries included in the above comparison constituted in 1923 over one-half of the total output of all manufacturing industries in that year.

As the comparison is based on value of products, the price level is one of the determining factors in the results. The fact that the general level of prices was higher in 1923 than in 1921 accounts in part for the better showing in actual output in 1923.

(SOURCE: UNITED STATES CENSUS OF MANUFACTURES)

Seeking Higher Steel Prices

Mills Display Stiffening Tendency But Lack of Balanced Demand Keeps Situation Unsettled—Some Backlogs Being Acquired—Heavier Rail Orders Placed —Structural Steel Requirements Continue Large

AS NEW tonnage from steel buyers has held up, in many cases exceeding shipments, producers are making more earnest efforts to lift prices which in certain products at least are pronounced as unremunerative. This week has brought out a number of definite or tentative moves of this kind. Leading Pittsburgh and some independent producers have raised their quotations on structural shapes $2 per ton. Western mills are trying out the situation with advances in one or two minor products. There is talk of $5 additional on automobile sheets for first quarter, of higher galvanized sheet prices and of some early action in wire products.

These marks of greater strength, however, are offset by new weakness in other directions illustrating the unbalanced condition of the market due largely to the lack of comparable railroad tonnage. Youngstown mills this week sold some thousands of tons of sheet bars under last quarter contracts at $33.50. Plates in the East are lower at 1.70c to 1.75c, Pittsburgh. Cold-finished steel has softened. Black sheets are weak.

Mill bookings with certain exceptions are gaining but producers are inclined to be conservative in putting on additional capacity. Merchant bars stand out with mills filled generally 30 to 45 days and at Chicago some equipment is engaged to the year-end. Mahoning valley sheet mills are running at 94 per cent, the best this year.

Iron Outlook Gaining

Complete figures of pig iron production for September show a gain of 4 per cent over August on an average daily basis making a total increase over the low point in July of 5.6 per cent. The September gross output was 2,725,885 tons. In September the country made iron at the annual rate of 33,200,000 tons. Furnaces in blast during the month increased by 8 to 200 in all. This represents 51.7 per cent of the total number of furnaces in the country.

Rail Orders Placed

Railroad buying looks better now that rail orders for 1926 delivery are crystallizing. The Louisville & Nashville has placed 68,250 tons and the Illinois Central 60,000 tons. Other southern roads are credited with closing on 40,000 tons. Chicago expects 200,000 to 250,000 tons of rails and 100,000 to 125,000 tons of track fastenings to be placed soon. The equipment market shows some fair items though buying manifestly is under restraint. The Louisville & Nashville added 1000 gondolas to its recent purchase and the Baltimore & Ohio 500 cars. The Montour bought 500 gondolas. The New York Central has a new inquiry out for 3000 box cars.

Big Tonnage Placed

Approach of the less favorable season for building operations appears to have greatly stimulated the placing of work under contract, as reflected by the week's high total of structural steel awards. This reached 55,920 tons, the largest week since March. New York has 50,000 tons of additional subway work for this year and 100,000 tons for next year in sight. Total awards of all kinds in metropolitan area this year reach 450,000 tons. Chicago, where bookings now are 20 per cent ahead of last year, has 50,000 tons pending. September was the record month of the year in tonnage booked by shape mills.

Forward buying of pig iron is on the increase as buyers' needs grow and prices show more buoyancy. Cleveland reports sales of 45,000 tons, one-half for next year. Sellers usually want 50 cents higher on deliveries after Jan. 1 but they do not always obtain it. Tennessee iron

has been advanced to $19. Silveries and bessemer ferrosilicon are up another 50 cents. Automobile companies have substantially increased fourth quarter orders. A Cleveland merchant interest shipped more iron in September than any month in history while at Chicago the tonnage moved last month was the heaviest since August, 1920.

IRON TRADE REVIEW composite of 14 leading iron and steel products shows another practically stationary week, standing at $37.43 against $37.42 last week and $38.65 one year ago.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Oct. 7, 1925	Sept. 1925	July 1925	Oct. 1924
PIG IRON				
Bessemer, valley, del., Pittsburgh	$21.26	21.01	20.76	21.76
Basic, valley	18.50	18.25	18.00	19.00
Basic, eastern del., eastern Pa.	20.50	20.50	21.25	20.00
*No. 2 foundry, del. Pittsburgh	20.76	20.51	20.26	21.26
No. 2 foundry, Chicago	21.50	21.10	20.30	20.50
*Southern, No. 2, Birmingham	19.00	18.50	18.00	17.50
*Southern Ohio, No. 2 Ironton	19.50	19.50	19.00	20.00
**No. 2X, Virginia furnace	23.00	23.00	23.00	24.50
**No. 2X, eastern, del. Phila.	22.26	21.86	21.26	21.36
Malleable, valley	19.00	18.75	18.50	19.50
Malleable, Chicago	21.50	21.10	20.30	20.50
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del. Pittsburgh	20.26	19.86	19.76	20.76
Ferromanganese, del., Pittsburgh	119.79	119.79	119.79	104.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	3.75	3.45	2.80	3.00
Connellsville foundry, ovens	4.25	4.20	3.75	4.00
SEMIFINISHED MATERIAL				
Sheet bars, open hearth, Youngstown	33.50	34.25	33.80	36.65
Sheet bars, open-hearth, Pittsburgh	35.00	35.00	35.00	37.20
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	36.60
Wire rods, Pittsburgh	45.00	45.00	45.00	45.00
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	1.95	2.00	2.00
Steel bars, Chicago	2.10	2.10	2.10	2.00
Steel bars, Philadelphia	2.27	2.27	2.32	2.32
Iron bars, Philadelphia	2.17	2.12	2.17	2.18
Iron bars, Chicago, mill	1.90	1.90	1.95	2.10
Beams, Pittsburgh	1.90	1.90	2.00	2.00
Beams, Philadelphia	2.17	2.17	2.22	2.12
Beams, Chicago	2.10	2.10	2.10	2.00
Tank plates, Pittsburgh	1.80	1.80	1.90	1.80
Tank plates, Philadelphia	2.02	2.07	2.22	1.92
Tank plates, Chicago	2.10	2.10	2.10	2.00
Sheets, black, No. 28, Pittsburgh	3.10	3.15	3.15	3.40
Sheets, blue anl., No. 10, Pittsburgh	2.25	2.30	2.30	2.60
Sheets, galvanized, No. 28, Pittsburgh	4.20	4.20	4.20	4.60
Sheets, black, No. 28, Chicago	3.35	3.35	3.35	3.75
Sheets, blue anl. No. 10, Chicago	2.45	2.45	2.45	2.85
Sheets, galvanized, No. 28, Chicago	4.45	4.45	4.40	4.75
Wire nails, Pittsburgh	2.65	2.65	2.70	2.75
Wire nails, Chicago	2.70	2.70	2.80	2.90
Tin plate per base box, Pittsburgh	5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	18.00	19.00	17.20	18.40
Heavy melting steel, eastern Pa.	17.25	17.25	16.00	17.20
Heavy melting steel, Chicago	16.25	16.45	15.35	16.25
No. 1 wrought, eastern Pa.	18.25	18.25	18.25	18.75
No. 1 wrought, Chicago	15.75	17.05	15.90	15.95
Rails for rolling, Chicago	18.25	19.00	17.45	17.20

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Oct. 7, 1925)	$37.43
Last week (Sept. 30, 1925)	37.42
One month ago (September, 1925)	37.35
Three months ago (July, 1925)	37.45
One year ago (October, 1924)	38.65
Ten years ago (October, 1915)	26.19
Twelve years ago (October, 1913)	24.91

Late News Flashes

Chicago Operates Conservatively

Chicago, Oct. 6.—The Chicago district's average of steel ingot production is 78 per cent, with the mills continuing conservative and letting backlogs develop slowly.

Negotiate Transfer of Susquehanna Stacks

Buffalo, Oct. 6.—Negotiations are understood to be underway looking to the transfer by the Rogers, Brown Iron Co., of the four Susquehanna furnaces at Buffalo to another producing interest. The furnaces have an annual capacity of 500,000 tons.

Sheet Output Highest of Year

Youngstown, O., Oct. 6.—Operations throughout the Mahoning valley are on a higher basis. Sheetmakers have 119 of the 127 hot mills scheduled, or 94 per cent of capacity, the highest rate attained this year. District steel making is at 77 per cent of capacity, a gain of 2 per cent.

Americans Figure Indian Cars

New York, Oct. 6.—Domestic builders are figuring 564 broad gage and 910 meter gage four-wheel wagons for the Indian State railways. Burma Corp., Ltd., India, has purchased 291 covered four-wheel wagons from European builders. Atlantic Coast Line is inquiring for 500 box cars.

Books Big Russian Pipe Order

Philadelphia, Oct. 6.—The Reading Iron Co., Reading, Pa., has booked an order for iron casing for the Russian oil fields involving a valuation of $2,500,000. A second contract of even larger proportions now is being negotiated through the Guarantee Trust Co. of New York.

Furnace Companies Plan Merger

New York, Oct. 6.—It is reported that the Roane Iron Co., and the Dayton Coal & Iron Co. are planning a merger. The Roane company has two blast furnaces at Rockwood, Tenn., with annual capacity of 140,000 tons, while the Dayton company has two furnaces at Dayton, Tenn., with annual capacity of 125,000 tons.

President Palmer Quits Fleet Corporation

Washington, Oct. 6.—Admiral Leigh Palmer, president of the Emergency Fleet Corp., was deposed from that position today by action of the shipping board, through the acceptance of his resignation which has been in the hands of the board. Elmer E. Crowley of New York was made shipmaster and fleet manager, succeeding Admiral Palmer.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch, base

Pittsburgh, open hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	33.50
Philadelphia	39.30 to 39.80
Chicago	35.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	44.30 to 44.80

SHEET BARS

Pittsburgh	35.00
Youngstown	33.50 to 35.00

SLABS

Pittsburgh	$35.00
Youngstown	33.50 to 35.00

WIRE RODS

¼-inch and finer

Pittsburgh	$45.00
Cleveland	45.00
Chicago	47.00

Standard extras, $2.50 per ton over ⅜-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	1.90c to 2.00c
Philadelphia	2.07c to 2.32c
New York	2.14c to 2.34c
Chicago	2.10c
Cleveland	2.09c to 2.19c
Birmingham	2.05c to 2.15c

Steel Plates

Pittsburgh	1.75c to 1.90c
Philadelphia	2.02c to 2.17c
New York	2.04c to 2.19c
Chicago	2.10c
Cleveland	1.99c to 2.09c
Birmingham	2.00c to 2.10c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c
Pittsburgh, cold finishing	2.15c to 2.25c
Pittsburgh, forging quality	2.15c to 2.25c
Philadelphia, soft steel	2.22c to 2.32c
New York, soft steel	2.24c to 2.34c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c
Birmingham, soft steel	2.15c to 2.25c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	1.90c to 2.00c
Chicago, rail steel	2.00c to 2.10c
Mill, rail steel	1.90c to 2.00c
Philadelphia, common iron	2.12c to 2.22c
New York, common iron	2.14c to 2.24c
Chicago, common iron	1.90c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.40c
Bands, Pittsburgh, 6 inches and under	2.40c
Hot rolled strip steel, Pittsburgh stamping quality	2.20c to 2.40c
Hot rolled strip steel, Chicago	2.55c to 2.65c
Bands, Chicago	2.55c to 2.65c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland	3.75c
Worcester, Mass., Chicago	4.15c

Cold Finished Steel

Cold finished steel bars, drawn or rolled Pittsburgh, Chicago, carloads	2.40c to 2.50c
Less carload	2.65c to 2.75c
Steel shaft'g turned and polished Pittsburgh, Chicago	2.40c to 2.50c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steels

Pittsburgh base

S. A. E. Series—	
2300 (3½ per cent nickel)	4.50c to 4.75c
3100 (nickel chromium)	3.50c to 3.65c
6100 (Chrome vanadium)	4.25c to 4.80c
6100 (Chrome vanad. spring)	4.00c
9260 (Silico mang. spring)	3.25c to 3.40c

Billets—4 x 4 to 10 x 10, gross ton at net ton bar price; under 4 x 4 to 2½ x 2½-inch $5 higher. Chicago base $2 higher.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mills	43.00
Relaying rails, St. Louis	23.00 to 31.00
Relaying rails, Pittsburgh	27.00 to 30.00
Light rails, 25 to 45 mill	1.60c to 1.70c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7-16 inch and smaller, Pitts.	2.90c to 3.00c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c to 3.00c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c to 4.15c
Tie plates, Pittsburgh	2.35c
Tie plates, Chicago	2.35c

Wire Products

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base

Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c
Coated nails, count keg	1.80c to 1.85c
Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts.	$20.08

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28, Pittsburgh base	3.05c to 3.15c
No. 28 Philadelphia, delivered	3.32c to 3.52c
No. 28, Gary, Indiana Harbor	3.30c
No. 28, Chicago, delivered	3.35c

TIN MILL, BLACK

No. 28, Pittsburgh	3.05c to 3.25c
No. 28, Gary base	3.25c to 3.40c

GALVANIZED

No. 28, Pittsburgh base	4.20c
No. 28, Philadelphia, delivered	4.52c
No. 28, Gary, Indiana Harbor	4.40c
No. 28, Chicago, delivered	4.45c

BLUE ANNEALED

No. 10, Pittsburgh base	2.25c to 2.30c
No. 10, Philadelphia, delivered	2.52c to 2.62c
No. 10, Gary, Indiana Harbor	2.40c
No. 10, Chicago, delivered	2.45c

AUTOMOBILE SHEETS

No. 22, Pittsburgh base	4.25c

Tin Plate

Prices per 100-pound box, Pittsburgh

Tin plate, coke base	$5.50

Gary, Ind. base 10 cents higher

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	80	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, f.o.b. mills	2.90c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$53.20 to 54.20
Six-inch and over, Chicago	49.20 to 50.20
Four-inch, Birmingham	45.00 to 46.00
Six-inch and over, Birmingham	41.00 to 42.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60
Standard fittings, Birmingham, base	$110.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list
Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger	75, 10 and 5 off
Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off
Cold finished S. A. E. semifinished ⅝-inch and larger	75, 10, 10 and 5 off
Cold finished S. A. E. semifinished 9/16-inch and smaller	80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅜ x 6", smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅜ x 4", hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
*Flat and round head stove bolts	80, 10 and 5 off
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off
Rough stud bolts with nuts (250 pieces or more of a size)	40 and 10 off
*Stove bolts 80, 10 and 5 off plus 2½ in bulk	
Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	23.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80, 10 and 5 off
Upset	80, 10, 10 and 5 off

SQUARE HEAD SET SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

Rivets

Structural rivets, carloads Pittsburgh and Cleveland	2.40c to 2.50c
Structural rivets, carloads, Chicago	2.60c
**Rivets, 7/16-in. and smaller Pittsburgh and Cleveland	70, 10 and 5 off
**Rivets, 7/16-in. and smaller Chicago	70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chi. dist.	$6.30 to $6.40 off
Wrought, c.l., Pitts. dist.	6.25 off
Lock washers f.o.b. factory	85 off

Pig Iron

Buyers Keener to Close for First Quarter Requirements—Enlarge Fourth Quarter Purchases—Prices Strong

A QUICKENING demand for pig iron for the first quarter is a point of importance in the market this week. Some furnaces are active in booking contracts for that period, and it is understood in certain instances the present valley base price of $19 applied. Other interests are refraining to quote, or naming 50 cents to $1 over current levels, and a fair volume of business has been taken on such values, principally in Ohio, Michigan and Indiana territory. Motor car manufacturers are repeating orders for the fourth quarter against known requirements, while some additional sales in other districts are believed to represent intended carry-overs to the first quarter. Southern iron is firming up. A few sales at $21, base, Birmingham, are reported.

PITTSBURGH, Oct. 6.—Pig iron buyers having faith in prices are endeavoring to place orders in excess of their last quarter requirements. Buying involves small lots. Some sales of foundry iron are noted at $19, valley, although a few brought $19.50, valley.

The Deming Co., Salem, O., is understood to have bought 1000 tons of No. 2x and No. 2. One buyer closed 400 tons of No. 2x at $20.15, valley. Another taking a slightly larger tonnage paid $20, valley. Two inquiries for different analyses of malleable aggregating 800 tons for this year developed quotations of $19 and $19.50, valley. The National Radiator Co., New Castle, wants 3000 tons of foundry for fourth quarter and 4500 tons for first quarter. Whenever sellers cannot avoid quoting they name $20, base or higher. Two sales of bessemer, 500 tons each, were closed at $19.50, valley. One middle interest closing a six months contract for 2000 or 3000 tons with a regular customer this week is quoting $20, valley. Nothing new is noted in basic.

After remaining unchanged at $19 and $18, for three months, average selling prices of bessemer and basic pig iron, compiled by W. P. Snyder & Co., during September, moved upward to $19.28 and $18.27 respectively.

Boston, Oct. 6.—Pig iron sales for first quarter continue active. One dealer reports a week's total of 2000 tons made up of small lots, and at prices nearly $1 above the levels obtained a week ago on orders for 1000 tons or more. A firmer tone prevails. Buffalo furnaces are well established as $19, base, for moderate tonnages. Eastern Pennsylvania iron is held at $20.50 base. Inquiry includes 300 tons of malleable, 750 tons for a Connecticut foundry, and several lots of 300 and 500 tons for users in northern New England.

Buffalo, Oct. 6.—New inquiry for pig iron totals 20,000 to 25,000 tons. One consumer wants 3200 tons of foundry and malleable. Last week's sales totaled more than 20,000 tons, and one Buffalo maker is reported to have booked practically his fourth quarter capacity. Two new open quotations for first quarter iron are announced here this week, the Rogers, Brown Iron Co. quoting $19.50 and the Wickwire-Spencer Steel Corp., $20. One other maker will book at $19.50 it is understood. A little fourth quarter business could be placed here at $19 but nothing below that price is reported. There are 12 furnaces in blast in the district, the Bethlehem Steel Corp. having added one and having four now in operation.

Pig Iron Prices

Prices per gross tons

Bessemer, valley	$19.50
Bessemer, Pittsburgh	21.26
Basic, valley	18.50
Basic, Pittsburgh	20.26
Basic, Buffalo	18.50 to 19.00
Basic, del., eastern Pa.	20.50 to 21.00
Malleable, valley	19.00 to 19.50
Malleable, Pittsburgh	20.76 to 21.26
Malleable, Cleveland	20.00
Malleable, Chicago	21.50
Malleable Buffalo	19.00
Malleable, del., eastern Pa.	22.25
No. 1X, eastern del., Phila.	22.76 to 23.26
No. 1X, Buffalo	19.50 to 20.00
No. 1X, Buffalo	19.50 to 20.00
No. 1 foundry, Chicago	22.50
No. 2 foundry, valley	19.00 to 19.50
No. 2 foundry, Pittsburgh	20.76 to 21.26
No. 2 foundry, Buffalo	19.00
No. 2 foundry, Chicago	21.50
No. 2 foundry, Granite City	22.50 to 23.00
No. 2 foundry, Ironton fur.	19.50 to 20.00
No. 2 foundry, Cleveland, del.	20.00
No. 2 foundry, del., Phila.	21.76
No. 2 foundry, N. J., tidewater	22.39
No. 2X, Eastern del., Phila.	22.26
No. 2X, east. N. J., tidewater	22.89
No. 2X, eastern del., Boston	24.65 to 25.65
No. 2X, foundry, Buffalo fur.	19.00 to 19.50
No. 2X, Buffalo, del., Boston	23.91 to 24.41
Continental foundry f.o.b. Boston	21.50 to 22.00
India, 2.25 to 2.75 silicon, delivered cars Boston	21.50 to 22.00
No. 2 Alabama, Birmingham	19.00 to 19.50
No. 2 Alabama, Cincinnati	23.05 to 23.55
No. 2 Tenn., Birmingham	19.00
No. 2 Tenn., Cincinnati	23.05
No. 2 southern, Philadelphia	25.01 to 25.51
No. 2 southern, Chicago	25.01 to 25.51
No. 2 southern, Chicago (barge and rail(	23.18 to 23.68
No. 2 southern, Boston (rail and water)	25.91 to 26.41
No. 2 southern, Cleveland	25.01 to 25.51
No. 2 southern, St. Louis	24.17 to 24.67
No. 2X, Virginia furnace	22.50 to 23.50
No. 2X, Virginia, Phila.	27.67 to 28.67
No. 2X, Virginia, Jersey City	28.04 to 29.04
No. 2X, Virginia, Boston	28.42 to 29.42
Gray forge, eastern Pa.	21.00 to 21.50
Gray forge, val. del. Pitts	20.26
Low phos., standard, valley	27.00 to 27.50
Low phos., standard, Phila.	26.79
Low phos., Lebanon, furnace	23.50 to 24.50
*Low phos., English	24.01
Charcoal, Birmingham	30.00 to 32.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $24.50; 6 per cent $25.50; 7 per cent $26.50; 8 per cent $27.50; 9 per cent $29.00; 10 per cent $31.00; 11 per cent $33.00; 12 per cent $35.00; 13 per cent $37.00; and 14 per cent $39.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $33.50; 11 per cent $35.00; 12 per cent $37.00; 13 per cent $39.00; 14 per cent $41.00; 15 per cent $43.50; 16 per cent $46.00; 17 per cent $48.50.

*Duty paid, delivered eastern consuming points.

New York, Oct. 6.—It is estimated about 15,000 tons of pig iron was sold here in the past week, mainly to the Ingersoll-Rand Co. and Richmond Radiator Co. New inquiry is very quiet. Prices are stronger. Nineteen dollars, Buffalo, seem to be minimum. Some Buffalo iron has been sold at $20 base for this year. Eastern Pennsylvania foundry iron seems $21, base, as minimum. Indian iron now is $20.50 to $21, base, duty paid. It was learned here that $21, base Birmingham, has been done in the South, with $20 apparently the minimum.

Philadelphia, Oct. 6.—Pig iron prices are stronger but sales are smaller. The largest sale involves several thousand tons of basic. A radiator company is inquiring for 7500 tons for fourth and first quarters. Foundry iron seems firm at $21, base, eastern Pennsylvania furnace, with less shading to meet freight differentials. One maker with a large order book quotes $21.50, base. Prices of Indian iron have been advanced to meet domestic quotations. Two eastern makers quote No. 1X $1.50 above No. 2X. Sales of Virginia iron in carloads bring $22.75, base, furnace.

Cleveland, Oct. 6.—Several leading motor car manufacturers in the Detroit district, including the General Motors Corp. have purchased substantial tonnages of pig iron over and above their previous orders for fourth quarter. One of the merchant furnace interests here had the best shipping record of its history in September, and October will surpass the former month, according to present indications. From all viewpoints the market is improving. Of the more than 45,000 tons booked by makers whose headquarters are here, during the past week, more than half is for first quarter, and a large share of the remainder represents repeat orders for the fourth. The largest single sale is 5000 tons, for delivery from Buffalo to an eastern consumer, for fourth and first quarter. A Cleveland foundry placed 1500 tons for first quarter. Current inquiries include around 10,000 for first quarter, and

several thousand tons for the present quarter. It is understood that some of the iron for next year delivery was taken at current prices. Some valley makers have quoted $19, base, furnace, for first quarter. On the other hand, furnaces west of here have succeeded in obtaining 50 cents to $1 more than current levels. The price for the present quarter remains $20, furnace, for Cleveland delivery. Jackson county makers of silveries and bessemer ferrosilicon have advanced 50 cents, 10 per cent silveries now being $31, and 12 per cent bessemer ferrosilicon $37.

Cincinnati, Oct. 6.—Firmness characterizes the pig iron market in this district. No. 2 Tennessee foundry iron has advanced to $19 Birmingham, while Alabama iron is quoted $19 to $19.50 furnace. Northern foundry iron ranges from $19.50 to $20 Ironton. Sales in the past week aggregated 5000 tons, of which 1800 tons was silvery iron. The Henry Vogt Machine Co., Louisville, bought 500 tons of southern and 100 tons of malleable. The Lavelle Foundries Co., Anderson, Ind., which recently bought 1000 tons of malleable, is out for 3000 tons of northern foundry for first half. Another Indiana melter wants 400 to 600 tons of the same grade for first quarter.

Chicago, Oct. 6.—September ship-

(*Concluded on Page* 925)

Ferroalloys

Spiegeleisen Shows Activity—More Makers Offer Ferromanganese

New York, Oct. 6.—Ferromanganese demand is small with the price unchanged at $115, duty paid tidewater. Spiegeleisen is active with 1500 tons for last and first quarter booked this week. The market is unchanged at $33 for 20 per cent but with lower obtainable on large tonnages.

Special ferroalloys are moderately active but prices are unchanged. With steel mills operating at a higher rate than a few weeks ago, the situation in the alloy markets is bright. Tungsten ore is around $12 a short ton unit for wolframite.

Pittsburgh, Oct. 6.—Slightly increased demand for ferrosilicon, mostly low grade, is the outstanding development in the ferroalloys market. Ferromanganese continues quiet, with small lots up to 150 or 200 tons being bought. All sales whether domestic or foreign are being made at the full $115 figure. Instead of one domestic producer active as a seller, three now are in the field although two are not openly soliciting business. A carload of 50 per cent ferrosilicon was sold at $85, freight allowed, figure and two buyers closed on five carloads of bessemer 12 per cent ferrosilicon at $36.50 furnace, one taking four carloads. The spiegeleisen producer has no difficulty in obtaining $32 and $33 for single carloads of 16 to 19, and 19 to 21 per cent material, respectively. One sale of nickel, 7500 pounds, for delivery over October, November and December, is noted at the full market price, 34 cents.

Chicago, Oct. 6.—Although considerable first quarter business in ferroalloys is yet to be placed, melters have been slow in coming forward and most recent business has been confined to carloads. Spiegeleisen is quoted at $33, furnace, for carloads and ferromanganese at $115, seaboard.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$115.00
Ferromanganese delivered Pittsburgh	119.70
Spiegeleisen 19 to 21 per cent per domestic furnace or tidewater	33.00
Ferrosilicon, 50 per cent contract freight allowed	82.50 to 85.00
Ferrotungsten standard, cents per pound contained	1.10 to 1.15
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 3.90
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, electrolytic, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	$91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent material)	$122.50

†Duty paid

Coke

Beehive and By-Product Markets Stronger — Connellsville Furnace Grade Up 25 Cents

COKE prices are showing a stronger tendency as demand increases for domestic sizes as a substitute for coal. Connellsville furnace coke is 25 cents higher than a week ago, $3.75 to $4 representing the spot market. Demand is not large. One effect of the tight fuel situation is an advance on by-product foundry and domestic grades in some districts.

Pittsburgh, Oct. 6.—A stiffening tendency is noted in the beehive coke market. Increasingly high figures, around $7, are obtainable for crushed coke of chestnut and egg sizes for domestic and nonmetallurgical purposes. They automatically carry prices of the standard furnace grade higher. The spot market minimum for the latter is up 25 cents since a week ago; $3.75 to $4 now being quoted. A few sales were made at $3.60 and $3.65 just prior to the advance. Blast furnace inquiry put out by brokers two weeks ago for 5000 tons monthly over the last quarter are understood to have been satisfied. Another furnace wanted 2500 tons for filling in purposes and is understood to have bought at $3.85. Nonmetallurgical inquiries involve 500 to 2500 tons at a time. Small sales of foundry coke are noted at $4.25 to $5, and a slight increase in contract specifications is noted.

Production of coke in the Connellsville region for the week ended Sept. 26 was 122,130 tons, compared with 119,066 tons the preceding week, according to the *Connellsville Courier*.

New York, Oct. 6.—Screened and crushed coke is bringing as high as $7.50, Connellsville, for use as domestic fuel. While foundry demand is quiet prices are firmer. It is difficult to shade $5. By-product foundry coke continues $10.41 delivered at Newark and other northern New Jersey points.

Cleveland, Oct. 6.—Foundries are buying by-product coke made in larger tonnages, more frequently, and asking for speedier deliveries. The price is firm at $7.50, Painesville, O. Demand for coke for domestic purposes as a coal substitute has expanded so rapidly that nut and egg sizes have been advanced from $5.50 a week ago to $7, Warren, O.

Cincinnati, Oct. 6.—Heavy bookings of orders for domestic and by-product foundry coke are reported by producers and sellers here. Shipments of by-product foundry fuel this month are likely to break all records for the year. Production in the Wise county and New River districts has been increased 25 per cent over last month. Several important inquiries are pending involving furnace coke

St. Louis, Oct. 6.—Sales of foundry coke have increased. Some melters find it difficult to fill their requirements. Most of the buying continues for immediate needs. Shipments to the West and Southwest are large. In this district reserve stocks in users' yards are light. Local by-product manufacturers are operating at capacity. Specifications on industrial contracts are reported satisfactory. Prices are firm on all grades.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville furnace	$3.75 to 4.00
Connellsville, foundry	4.25 to 4.75
New River foundry	7.00 to 7.50
Wise county furnace	3.75 to 4.25
Wise county foundry	4.50 to 5.25
Alabama foundry	4.75 to 5.00
Alabama furnace	4.25 to 4.50

By-Product

Foundry, Newark, N. J.; del.	$10.41
Foundry, Chicago, ovens	10.25
Foundry, New England, del.	12.00
Foundry, St. Louis	10.00
Foundry, Granite City, Ill.	9.50
Foundry, Birmingham	4.75 to 5.00

Plates

New Demand Slow in Developing—Prices Show Easier Trend —Ship Plates Are Purchased

ONLY moderate size tonnages are noted in plate business placed during the week. Eastern demand is better, orders including 7000 tons for two Clyde boats, but prices are easier. Car inquiries pending at Chicago call for 50,000 tons of steel, largely plates. On the 75,000 tons for the Oakland pipe line it is reported the price was equivalent to about 1.50c, Pittsburgh.

PLATE PRICES, PAGE 910

Philadelphia, Oct. 6.—Better plate demand is apparent but eastern mills are not operating above 30 to 50 per cent Anxiety for business is weakening the market, which now is 1.70c to 1.75c, Pittsburgh, with even lower prices in special cases. It is understood the Newport News Shipbuilding & Dry Dock Co. placed 7000 tons of steel for two Clyde boats. The Pusey & Jones Co. is taking bids on 2500 tons of steel for two Ericson line boats. The Baldwin Locomotive Works is understood to have placed a plate tonnage. The Pennsylvania and Reading railroads are inquiring for fourth quarter plates.

Pittsburgh, Oct. 6.—As noted last week, the largest plate order of the year, 75,000 tons, is to be rolled by the Carnegie Steel Co. for the Oakland, Cal., welded pipe line. Shipments will be spread over about six months. A considerable portion will be shipped by the Panama canal. A comparatively low figure was made, somewhere around the equivalent of 1.50c, Pittsburgh. Most other plate business is spasmodic. Some 3000 or 3500-ton orders have come through for ship plates. Some of the eastern competitive levels around 1.75c, Pittsburgh, have been met but the general tendency is to adhere to 1.80c minimum.

Youngstown, O., Oct. 6.—Little sales effort is being expended in securing plate tonnages by district producers owing to prices at which business is being taken in other districts. The price 1.85c, Pittsburgh, is representative of the current market.

Cleveland, Oct. 6.—Plate conditions show less foundation than some of the other heavier lines due to the lack of railroad business and the large productive capacity. Orders in this territory usually have been running small though their number and general spread are favorable. Inquiry is increasing. Prices remain at 1.99c, Cleveland or 1.80c, Pittsburgh.

Chicago, Oct. 6.—While car steel is slow in developing, a good run of miscellaneous tank work, including small tanks for domestic oil heating systems and gasoline stations, has given tank makers heavy schedules. The Roxana Refining Co. has placed 1200 tons with a local tank fabricator for oil storage tanks for Arkansas. Pending car inquiry in this district calls for probably 50,000 tons of heavy steel. Plates are unchanged at 2.10c, Chicago.

CONTRACTS PLACED

6500 tons, ship plates to a Pittsburgh mill for an ocean liner to be built at an eastern shipyard, 3500 tons; several smaller boats involving 3000 tons to be built in Virginia.

3000 tons, mostly plates, for car bodies for the Baltimore & Ohio railroad, to a Pittsburgh mill.

500 tons, 20 to 27-inch dredge pipe for large dredging company in California for use on Pacific Coast and eastern coasts, to Pacific Coast Engineering Co.

225 tons, small tanks for Pan American Petroleum Corp., San Pedro, Calif., to Pacific Coast Engineering Co.

100 tons, small tanks for Associated Oil Co., Salinas, Calif., to Steel Tank & Pipe Co.

100 tons, addition to the 350 tons noted last week going to the Pittsburgh Des Moines Steel Co. for a penstock in New Hampshire.

CONTRACTS PENDING

1000 tons, 15 to 20 tanks for the Proctor & Gamble Co., Cincinnati, O.; the Chicago Bridge & Iron Works and the Graver Corp. understood to be low bidders.

125 tons, for Southern Pacific Equipment Co., San Francisco; bids in.

100 tons, 27-inch pipe for Port of Portland, Portland, Oreg.; bids Oct. 9.

100 tons, for export to Philippine Islands by exporter; bids being received.

Semifinished

Sheet Bar Contracts Taken at $33.50, Valley—Future Market More Active

CONTRACTS for sheet bars for fourth quarter have been closed at $33.50, valley, and some users are understood to have covered most of their requirements at this figure. The same mills still have a price of $33.50 on billets and slabs, while in Pittsburgh makers hold to their differential, with $35 quoted on sheet bars. More business has been transacted than in many weeks.

SEMIFINISHED STEEL PRICES, PAGE 910

Youngstown, O., Oct. 6.—Practically every consumer of sheet bars in the Mahoning valley signed contracts late last week for their fourth quarter requirement, following the nine months' period of open market negotiations. The aggregate tonnage booked has forced one producer out of the market on all forms of semifinished steel until next quarter. The price at which these sheet bar contracts were closed was $33.50 Youngstown. The available supply of semifinished steel now is in the hands of one district producer who is naming $33.50 to $35 Youngstown on sheet bars, billets and slabs, depending on specifications and tonnage.

Philadelphia, Oct. 6.—Billet prices are being shaded. The market now is $34 to $34.50. Pittsburgh, for rerollers, and $39 to $39.50 for forging. Lower prices have been done in some instances. Buying continues hand-to-mouth.

Pittsburgh, Oct. 6.—Some users of rerolling billets and slabs are placing fair size orders. Some of these involve 100 or 150 tons at a time; others call for 1000 tons or more. The price on 4 x 4-inch rerolling billets as well as on slabs, has been $35, and where billets 1¼-inch are specified the $1.50 differential is obtained. Some additional forging billet business has been accepted at $40, Pittsburgh, and while one or two buyers claim to have prices of $38.75, this is discounted and the lowest quotation that has been discovered is $40, delivered this territory. One or two blocks of forging billet business still are pending.

Sheet bar orders still are lacking although some negotiations are under way. The Carnegie Steel Co. is not contracting, but is extending customers' requirements of sheet bars. Its present price is $35. Other steel companies are holding to this figure, although noting $33.50, valley, has been done. An inquiry for 1000 tons of sheet bars from a West Virginia user is pending.

Several chainmakers as well as cold-bar finishers are taking out material on their wire rod contracts at $45. Specifications are practically up to date. Skelp is easy at 1.90c but current demand is small.

Cleveland, Oct. 6.—Negotiations for sheet bars that have been more frequent recently have resulted in developing a lower price at which some fair size tonnages have been closed for fourth quarter. Valley mills have taken contracts at $33.50, and mills now have good backlogs. The price $35, valley, has not disappeared. The leading maker here has most of its fourth quarter output under contract at trade paper quotations.

Iron and Steel Scrap Prices

Corrected to Tuesday Noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	13.00 to 14.00
Boston (dealers)	11.50 to 12.50
Buffalo	18.00 to 18.50
Chicago	16.00 to 16.25
Cincinnati (dealers)	14.00 to 14.50
Cleveland	17.00 to 17.25
Detroit	14.50 to 15.50
Eastern Pennsylvania	17.00 to 17.50
Bethlehem delivery	17.00
New York (dealers)	12.50 to 13.00
Pittsburgh	18.00 to 18.50
St. Louis	15.50 to 16.00
Valleys	17.75 to 18.00

COMPRESSED SHEETS

Buffalo	15.50 to 16.00
Chicago	13.50 to 14.00
Cleveland	14.25 to 14.50
Detroit	12.50 to 13.00
Pittsburgh	17.00 to 17.50
Valleys	16.25 to 16.50

BUNDLED SHEETS

Buffalo	14.50 to 15.00
Cincinnati (dealers)	10.00 to 10.50
Cleveland	11.50 to 11.75
Eastern Pennsylvania	14.50
Pittsburgh	16.00 to 16.50
St. Louis	10.00 to 10.50
Valleys	14.25 to 14.50

SHEET CLIPPINGS, LOOSE

Chicago	9.00 to 9.50
Cincinnati	10.00 to 10.50
Detroit	9.50 to 10.00

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Buffalo	17.75 to 18.25
Chicago	19.00 to 19.50
Cincinnati (dealers)	17.50 to 18.00
Cleveland (over 6 ft.)	16.25 to 16.50
Detroit	17.00 to 17.50
St. Louis	18.50 to 19.00

STOVE PLATE

Birmingham	13.00 to 14.00
Boston (consumers)	14.00 to 14.50
Buffalo	15.00 to 15.50
Chicago	16.00 to 16.50
Cincinnati (dealers)	10.50 to 11.00
Cleveland	13.50 to 13.75
Detroit (net tons)	13.25 to 13.75
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.50 to 12.00
Pittsburgh	14.00 to 14.50
St. Louis	14.00 to 14.50

LOW PHOSPHORUS

Buffalo	20.00 to 20.50
Cincinnati (dealers)	15.00 to 15.50
Eastern Pennsylvania	21.00 to 22.00
Pitts. billet and bloom crops	23.00 to 23.50

SHOVELING STEEL

Chicago	15.75 to 16.25
Pittsburgh	14.00 to 14.50
St. Louis	15.50 to 16.00

KNUCKLES, COUPLERS, SPRINGS

Chicago	18.50 to 19.00
Eastern Pennsylvania	20.50 to 21.00
Pittsburgh	21.00 to 21.50
St. Louis	17.00 to 17.50

FROGS, SWITCHES, GUARDS

Chicago	17.00 to 17.50
Eastern Pennsylvania	17.00 to 17.50
St. Louis	17.50 to 18.00

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	18.50 to 19.00
St. Louis	16.50 to 17.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	12.00 to 13.00
Boston (dealers)	13.50 to 14.00
Buffalo, No. 1	15.75 to 16.25
Buffalo, No. 2	17.50 to 18.00
Chicago, No. 1	15.75 to 16.25
Chicago, No. 2	16.00 to 16.25
Cincinnati, No. 1 (dealers)	10.50 to 11.00
Cleveland, No. 1	12.25 to 12.50
Eastern Pennsylvania	18.00 to 18.50
New York, No. 1 (dealers)	15.50 to 16.00
Pittsburgh, No. 1	15.50 to 16.00
Pittsburgh, No. 2	18.00 to 18.50
St. Louis, No. 1	14.50 to 15.00
St. Louis, No. 2	15.25 to 15.75

WROUGHT PIPE

Boston (dealers)	12.00 to 12.50
Buffalo	15.00 to 15.50
Eastern Pennsylvania	16.50 to 17.50
New York (dealers)	12.50 to 13.00

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	17.00 to 18.00

BUSHELING

Buffalo	16.00 to 16.50
Chicago, No. 1	13.50 to 14.00
Chicago, No. 2	9.75 to 10.25
Cincinnati, No. 1 (dealers)	13.50 to 14.00
Cleveland, No. 1	13.75 to 14.00
Cleveland, No. 2	13.25 to 13.50
Eastern Pennsylvania	14.00 to 15.00
Pittsburgh, No. 1	15.50 to 16.00
St. Louis, No. 1	14.00 to 14.50

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston (chemical)	9.00 to 9.50
Buffalo	12.00 to 12.50
Chicago	8.75 to 9.25
Cincinnati (dealers)	10.00 to 10.50
Cleveland	12.50 to 13.00
Detroit	10.25 to 10.75
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	9.75 to 10.25
Pittsburgh	14.00 to 14.50
St. Louis	9.00 to 9.50
Valleys	12.00 to 12.50

CAST IRON BORINGS

Birmingham (chemical)	15.00 to 16.00
Birmingham (plain)	7.00 to 8.00
Boston (chemical)	11.00 to 11.25
Boston (dealers)	9.00 to 9.50
Buffalo	12.25 to 12.75
Chicago	12.50 to 13.00
Cincinnati (dealers)	10.00 to 10.50
Cleveland	13.75 to 14.00
Detroit	10.75 to 11.25
Eastern Pennsylvania	15.00
Eastern Pennsylvania (chem.)	16.00 to 16.50
New York (dealers)	9.75 to 10.25
Pittsburgh	14.00 to 14.50
St. Louis	12.50 to 13.00
Valleys	13.50 to 13.75

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.50 to 9.00
Buffalo	12.00 to 12.50
Cincinnati (dealers)	10.00 to 10.50
Cleveland	13.75 to 14.00
Detroit	10.75 to 11.25
Eastern Pennsylvania	12.00 to 13.50
New York (dealers)	9.75 to 10.25
Pittsburgh	14.00 to 14.50

PIPES AND FLUES

Chicago	12.50 to 13.00
Cincinnati (dealers)	9.00 to 9.50
Cleveland	11.75 to 12.00
St. Louis	12.00 to 12.50

RAILROAD GRATE BARS

Buffalo	14.50 to 14.75
Chicago	15.75 to 16.25
Cleveland	13.50 to 13.75
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.50 to 12.00
St. Louis	14.00 to 14.50

FORGE FLASHINGS

Boston (dealers)	9.50 to 10.00
Buffalo	14.50 to 15.00
Chicago	11.00 to 11.50
Cleveland (under 10 in.)	13.00 to 13.25
Cleveland (over 10 in.)	12.50 to 12.75
Detroit	10.75 to 11.25
Pittsburgh	12.50 to 13.00

FORGE SCRAP

Boston (dealers)	9.50 to 10.00
Chicago	19.00 to 19.50
Eastern Pennsylvania	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago	23.00 to 23.50
St. Louis	21.00 to 21.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	9.50 to 10.00
Buffalo	15.00 to 15.50
Chicago	14.00 to 14.50
Cleveland	15.00 to 15.25
Eastern Pennsylvania	15.00 to 15.50
Pittsburgh	16.50 to 17.00
St. Louis	13.00 to 13.50

STEEL CAR AXLES

Birmingham	18.00 to 20.00
Boston (shipping point)	17.50 to 18.00
Buffalo	20.00 to 20.50
Chicago	19.00 to 19.50
Cleveland	17.00 to 17.25
Eastern Pennsylvania	24.00 to 25.00
Pittsburgh	21.50 to 22.00
St. Louis	19.50 to 20.00

SHAFTING

Boston (shipping point)	18.50 to 19.00
Chicago	20.50 to 21.00
Eastern Pennsylvania	23.00 to 24.00
New York (dealers)	18.00 to 19.00
St. Louis	17.50 to 18.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	15.00 to 16.00
Boston (consumers)	17.50 to 18.00
Buffalo, iron	15.50 to 16.00
Buffalo, steel	18.00 to 18.50
Chicago, iron	16.75 to 17.25
Chicago, steel	19.00 to 19.50
Cincinnati	13.50 to 14.00
Eastern Pennsylvania	18.50 to 19.00
New York iron (dealers)	14.00 to 15.00
Pittsburgh, iron	17.50 to 18.00
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	17.50 to 18.00
St. Louis, steel	18.50 to 19.00

NO. 1 CAST SCRAP

Birmingham, cupola	16.00 to 17.00
Boston	19.00 to 19.50
Buffalo	17.00 to 17.50
Chicago, No. 1 machinery	19.25 to 19.75
Chicago No. 1 railroad or agricultural	18.50 to 19.00
Cincinnati No. 1 Machinery cupola (net tons dealers)	18.50 to 19.00
Cleveland, cupola	18.00 to 18.50
Detroit (net tons)	15.00 to 15.50
Eastern Pennsylvania, cupola	18.50 to 19.00
New York, cupola (dealers)	15.00 to 15.50
Pittsburgh, cupola	17.50 to 18.00
San Francisco, delivered	20.00 to 21.00
Seattle	18.00
St. Louis, railroad	18.00 to 18.50
St. Louis, agricultural	18.00 to 18.50
St. Louis, machinery	19.50 to 20.00
Valleys	18.00 to 18.50

HEAVY CAST

Boston	16.50 to 17.00
Buffalo (breakable)	15.00 to 15.50
Cleveland	12.25 to 12.75
Detroit (automobile) (net tons)	20.00 to 20.50
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	14.50 to 15.00
Pittsburgh	15.00 to 15.50

MALLEABLE

Boston, railroad	19.00 to 19.50
Buffalo	19.00 to 19.50
Chicago, agricultural	16.75 to 17.25
Chicago, railroad	17.50 to 18.00
Cincinnati, railroad (dealers)	14.00 to 14.50
Cincinnati, agricultural (dealers)	15.00 to 15.50
Cleveland, agricultural	18.00 to 18.50
Cleveland, railroad	18.75 to 19.25
Detroit	15.50 to 16.00
Eastern Pennsylvania, railroad	17.50 to 18.00
Pittsburgh, railroad	18.50 to 19.00
St. Louis, agricultural	14.00 to 14.50
St. Louis, railroad	15.50 to 16.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	16.00 to 17.00
Boston (dealers)	12.50 to 13.00
Buffalo	17.50 to 18.00
Chicago	18.25 to 18.75
Cleveland	16.50 to 16.75
Eastern Pennsylvania	18.00 to 18.50
New York	15.50 to 16.00
Pittsburgh district	19.50 to 20.00
St. Louis	18.25 to 18.75

LOCOMOTIVE TIRES

Chicago, No. 1	18.00 to 18.50
Chicago, cut	19.00 to 19.50
St. Louis, No. 1	16.50 to 17.00

LOW PHOSPHORUS PUNCHINGS

Chicago	18.00 to 18.50
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	21.00 to 21.50

Scrap

Deadlock Makes Slow Trading as Consumers Remain Out of the Market

SOMETHING of a deadlock exists in the market for iron and steel scrap. Dealers have plenty of material and can make deliveries promptly, while some distress scrap occasionally appears. Consumers are unable to buy at the price dealers make between themselves and rfuse to contract ahead. While mill stocks are being consumed steadily they are not being replaced.

Chicago, Oct. 6.—Moderate covering operations by dealers have constituted the chief activity in the iron and steel scrap market. Larger melters, with stocks in good shape, are not yet ready to come into the market. Because railroads are lagging in equipment buying dealers continue only reasonably optimistic over mill and foundry operation. Dealers are trading freely in heavy melting steel at $16, but are not willing to sell melters a tonnage at $16.25, which continues the offering price of melters. Smaller foundries are picking up a few cars of cast scrap, but the aggregate is not heavy. Steel specialties have lost 25 cents to 50 cents a ton, as have the cast grades. Melting steel now is quoted at $16 to $16.25.

Boston, Oct. 6.—Moderate improvement in demand for foundry grades of iron and steel scrap has given some activity to an otherwise dull market in New England. Demand for heavy melting steel has disappeared and prices have dropped nearly 50 cents during the last four or five days.

New York, Oct. 6.—Following active trading of a week or so ago, business in scrap has tapered off considerably and there is a general easier tendency in prices. Wrought pipe is down 50 cents, to a range of $12.50 to $13, New York. At least one dealer has recently reduced his buying prices on turnings and handled skeleton steel for mill use, paying no higher than $9.75, New York.

Pittsburgh, Oct. 6.—Several thousand tons of heavy melting steel scrap have been sold to Monessen, Pa., and other nearby consumers at $18.50 while a user down the Ohio river bought at $18. Dealers have scrap and know that mill operations are continuing at a high rate. Mills know that dealers can furnish them scrap whenever they want it and consequently are in no hurry to buy. Some steel foundries still are buying small lots at $21.50, but the situation largely is at a standstill with both sides awaiting further developments.

Detroit, Oct. 6.—Some encouragement is noted in the iron and steel scrap situation. While demand has not shown appreciable strengthening, the downward trend of prices has slackened and the market is a little stiffer. Prices are unchanged but price cutting is not so noticeable as during the past few weeks.

Buffalo, Oct. 6.—Dealers predict liberal purchases of heavy melting steel before the end of this month. One consumer offers $17 to $17.50 but dealers predict tonnage sales will be made $1 to $1.50 over this range. Recently railroad lists brought the equivalent of $19, Buffalo. Consumers stocks have been reduced because of higher operation and some major inquiries are expected soon.

Philadelphia, Oct. 6.—Scattered buying is the only activity in the market for iron and steel scrap. Prices are unchanged and in the absence of trading lack test of their firmness.

Cleveland, Oct. 6.—Dealers afford practically the only activity apparent in the iron and steel scrap trade here. While consumers remain out of the market and one large steelmaker in this district still holds up shipments on contract, early resumption of buying is expected. Prices remain unchanged but firm at last week's levels.

Cincinnati, Oct. 6.—Activity in iron and steel scrap it low. The only consumer accepting tonnages is the Wheeling Steel Corp. at Portsmouth, O. Dealers have cut their buying prices on a majority of items 50 cents.

St. Louis, Oct. 5.—Due principally to the presence of some distress material and the fact that mills are endeavoring to depress prices, iron and steel scrap showed further weakness, a number of items touching new lows on the present downward movement. Signs of improvement have appeared in the form of better inquiries and intimations by certain important melters that they would be willing to purchase round tonnages at a price. Heretofore these same users refused to be interested at all.

Birmingham, Ala., Oct. 5.—Much old material is moving and consumption is increasing as pig iron prices have an upward trend. Quotations despite the better consumption show no change. Heavy melting steel is still obtainable at $13.

Sheets

Market Is More Active, Prices of Blue Annealed and Black Easy—Galvanized Raise Seen

ALL sheet consuming lines are normally active, except railroad business, while demand from automotive manufacturers in a measure offsets this with needs larger than usual for this season. Users are more disposed to place contracts. Prices of black sheets in some instances figure back to 2.95c to 3.00c, Pittsburgh. More talk is heard of an advance of $2 on galvanized.

SHEET PRICES, PAGE 910

Youngstown, O., Oct. 6.—No decline in the volume of sheet orders is apparent. Michigan consumers still are taking attractive tonnages. The bulk of the current business is for immediate shipment. Blue annealed mills have accumulated about a month's rolling and while 2.25c still is noted, the tendency is toward firmness at 2.30c. The price of 3.10c on black sheets is securing tonnage, although a few producers are obtaining 3.15c on some entries. Spelter costs have cut into profits of galvanized makers but the bulk of current bookings are at 4.20c. Consumers who desire to get forward requirements under contract are quoted 2.30c on blue annealed, 3.15c on black and 4.30c on galvanized. High-grade sheets still are in good demand. Some consumers have placed contracts. Specifications for November and early December consignments are in the hands of makers.

Boston, Oct. 6.—Leading sellers hold galvanized sheets at 4.20c, Pittsburgh, but two small mills are quoting 4.15c and a third has made sales during the week at 4.10c. Black sheets are in slightly better demand at 3.10c, Pittsburgh.

Philadelphia, Oct. 6.—Several additional contracts for fourth quarter sheets have been placed. Prices show more fluctuation. Black sheets sold at 3.00c to 3.20c, Pittsburgh; blue annealed at 2.20c to 2.30c, while lower was named in some instances. Galvanized sheets seem firm at 4.20c. Eastern mills are operating at 70 to 75 per cent. Mills want specifications one to four weeks ahead.

Buffalo, Oct. 6.—An advance in the price of galvanized sheets has been made generally effective in this district, sellers declining to quote below 4.30c, Pittsburgh, according to their reports. Black sheets are unchanged, except that 3.15c is reported to minimum and only available on selected inquiries. Local mill production is high, and fourth quarter unfilled tonnage is good.

Pittsburgh, Oct. 6.—New orders for

sheets showed about the same high average percentage for the past week as for the week preceding. Large producers find that with the exception of railroad car business, all lines of sheet consumption are at least normally busy, while the automotive industry is abnormally active for this season. The active lines include farm implements, stove and range, electrical, building construction, household articles, etc. Sheet mill operations sometimes exceed 90 per cent in a week but they usually drop before the end of that period. The average for the entire industry for the past week, was slightly above 80 per cent. Prices leave much to be desired, especially in black sheets with 3.05c to 3.15c commonly named, although in some sections, prices figured back to a Pittsburgh basis, equal 2.95c and 3.00c. Galvanized sheets are firm at 4.20c and some independent producers are anxious to advance at least $2. Plate mill competition has furnished a blue annealed price of 2.20c but 2.20c to 2.30c is the present market level by blue annealed sheet producers. The 4.25c price is firm on full-finished, and a $5 per ton advance is indicated for first quarter. Some buyers after doing without contracts practically all year, are now starting to contract for the last quarter and even for the first half.

Chicago, Oct. 6.—The leading independent sheet interest continues to confine its bookings to nearby shipments and is not going beyond Dec. 1 when possible. Western mills have sufficient business now on their books to average deliveries 30 days behind. Prices are gathering strength but as yet are unchanged on the basis of 3.35c, Chicago, for black, 4.45c for galvanized and 2.45c for blue annealed.

Tin Plate

Canmakers Filing Specifications—New Orders Maintain Schedules

TIN PLATE PRICES, PAGE 910

Pittsburgh, Oct. 6.—New orders for tin plate from domestic and foreign buyers are enabling mills to maintain recent schedules. Canmakers are filing specifications for material for standard size cans so that the mills can make up the plates in what ordinarily would be a quiet period. Output still is on an 85 per cent basis, with some mills at 100 per cent. A list of the latter would include the American works of the American Sheet & Tin Plate Co., which unit has run full since last November. It shortly will have to become at least partially idle for overhauling although the tonnage in hand by that maker is sufficient to keep it, with its other plants, busy at unchanged schedules. The price still is $5.50 per base box, Pittsburgh.

Wisconsin Steel Co. probably will relight its third blast furnace at South Chicago, Ill., on Oct. 10.

Strip Steel

Bookings This Month Show Constantly Increasing Demand

STRIP PRICES, PAGE 910

Pittsburgh, Oct. 6.—More orders for hot and cold-rolled strip steel came through the past week than in the week preceding, and October promises to exceed September further than September exceeded August. A great many orders are coming from automobile manufacturers and automobile parts makers. Strip operations average about 70 per cent. Cold strips are firm at 3.75c and the market is shaping itself for an advance. Hot strips are unchanged at 2.20c, 2.40c being obtained on narrow sizes.

Philadelphia, Oct. 6.—Buying of hot-rolled strip steel is better and the contracting price for fourth quarter material is the firmest in a long time at 2.20c Pittsburgh for 6-inch and wider and 2.40c for widths under 6 inches.

Pipe

Bookings Continue Active—Cast Pipe Unseasonably Strong—Prices Remain Firm

BOOKINGS of pipe by mills continue sufficient to insure 75 to 85 per cent operations. Line pipe demand is deterred by weather. Cast iron pipe buying is unseasonably high. New York bought 3000 tons from American makers, but has not closed on 3000 tons for which German foundries are low. Chicago makers are booking at the spring rate.

PIPE PRICES, PAGE 910 AND 956

Pittsburgh, Oct. 6.—Tubular products orders are plentiful and the general mill position still is strongly fortified. Most manufacturers have good backlogs and on some outside diameter pipe one Youngstown maker is practically out of the market. On other lapweld pipe, deliveries are three or four weeks deferred. All orders are miscellaneous in character—mostly for one, three or five carloads. Jobbers are keeping well balanced stocks. In some sections of the country, building is going ahead in an active way but in the Pennsylvania-Ohio-West Virginia fields the tendency from now on will be to defer action for fear that the pipe will not be delivered before cold weather. Prices are steady at levels of the past two years. Seamless tubes find a ready sale and operations are on an 85 or 90 per cent average basis.

New York, Oct. 6.—The local department of water supply, gas and electricity, has awarded approximately 3000 tons of cast pipe to domestic makers out of more than 6000 tons up for figures. This business was divided about evenly between the United States Cast Iron Pipe & Foundry Co. and the Donaldson Iron Works. On the 3000 tons still pending and on which German makers were low, no action has yet been taken. Business of the past week included one or two other large jobs. Prices are virtually unchanged.

Boston, Oct. 6.—While several private sales ranging from 50 to 100 tons of pipe have been made during the week there is but one municipal job in immediate prospect. Prices on small sized cast pipe are exceptionally firm with deliveries on 4 and 6-inch pipe 90 days ahead in many cases.

Chicago, Oct. 6.—Cast iron pipe business the past week has been up to the average of May, June and July and with most makers has exceeded shipments. One maker last week put two weeks' business on his books. Considering the season, this is an unusual condition. Pressure for speedy delivery is unabated. Pipe 6-inch and over ranges from $41 to $42, Birmingham, or $49.20 to $50.20, Chicago, with 4-inch pipe $4 higher.

Birmingham, Ala., Oct. 5.—Heavy operations at several cast iron pressure pipe plants in this district attest the good condition of the market. Lettings the past week involved from 175 to 600 tons. Soil pipe and fittings trade continues dull.

CONTRACTS PLACED

3000 tons, approximately, for the department of water supply, gas and electricity, New York, awarded in about equal portions to the United States Cast Iron Pipe & Foundry Co. and the Donaldson Iron Works; on a similar lot, on which German makers were low, no action has yet been taken.

570 tons, Alliance, O., to James B. Clow & Sons.

274 tons, 2-inch standard black pipe and 6-inch Matheson joint pipe to Crane Co. and to N. O. Nelson Co.

200 tons, Mattoon, Ill., to National Cast Iron Pipe Co.

175 tons, South Pekin, Ill., to American Cast Iron Pipe Co.

100 tons, Vancouver, B. C., to Gordon & Belyea, Inc., who will furnish French pipe.

CONTRACTS PENDING

3844 tons, Los Angeles, Calif., 4 to 8-inch class B; bids opened.

1200 to 1500 tons, Seymour water main, Vancouver, B. C.; Gordon & Belyea, low at $107,500.

100 tons, 6-inch for Beverly, Mass.; pending.

Bolts, Nuts, Rivets

Larger Demand Brings Increased Production at Same Prices

NUT AND BOLT PRICES, PAGE 910

Chicago, Oct. 6.—Bolt and nut specifications have been sufficiently improved to warrant an increase of several points in operating schedules, and western mills average 75 per cent. Practically all larger users of bolts and nuts are coming into a period of increased consumption. Prices remain firm on the basis of 50, 10 and 10 off for large machine bolts.

Pittsburgh, Oct. 6.—Practically all customers of nut, bolt and rivet manufacturers who ordinarily contract for their requirements are under cover. However, considerable day-to-day and week-to-week buying still develops. The price situation is stronger on nuts and bolts than on rivets. Some rivet manufacturers have made low quotations as compared with the regularly quoted market levels of 2.40c to 2.50c because of their severe need of tonnage.

Cleveland, Oct. 6.—Price shading on bolts and nuts and rivets has disappeared. Most producers in this district are operating at capacity and report an unusually good demand. Buying is coming from a variety of sources, including implement makers, automobile plants and the railroads. One large producer here says business is the best in 15 years. Rivet business is unsettled. Structural rivets continue at 2.40c to 2.50c, Pittsburgh.

Iron Ore

Market Is Quiet—Inquiries for Small Lots Continue

Cleveland, Oct. 6.—A continuation of inquiries for small lots of Lake Superior iron ore is noted. Producers are figuring on a half dozen or more involving 10,000 to 25,000 tons. One seller closed 25,000 tons of manganiferous ore during the week. With few exceptions this year the established prices have applied on standard grades.

Lake shipments of ore in September totaled 7,354,873 tons, an increase of 1,189,942 tons over September, 1925. The total movement to Oct. 1 this year is 42,812,026 tons, against 34,961,872 tons in the same period last year.

Trumbull Shipments Gain

Youngstown, O., Oct. 6.—Trumbull Steel Co., Warren, O., shipped 38,500 tons of finished steel products in September according to an official announcement. This tonnage is 15 per cent greater than that of August and as good as last winter. Incoming business indicates that more than 40,000 tons will be shipped this month.

Bars

Demand Holds Up Well and Exceeds Production in Some Centers—Prices Are Firm

CONSUMERS of steel bars in a variety of lines appear to be busy and are buying freely. At Chicago inquiry last week exceeded any week this year and bookings were the largest for any week but one. At Philadelphia mills are in easier position on deliveries and prices are not so firm there as elsewhere. Some mills are booked far ahead. Price generally holds at 2.00c, Pittsburgh.

BAR PRICES, PAGE 910

Chicago, Oct. 6.—Including railroad business, inquiry for heavy finished steel last week was the heaviest for any week this year, while bookings were the largest for any week but one. The automotive industry is accounting for a record-breaking tonnage of bars for the season. Jobbers show signs of building up stocks. General users of bars are inquiring for an increasing tonnage for current programs. Deliveries remain fairly easy, although bookings continue to exceed shipments and the leading maker has some mills booked through the rest of the year. The leading independent last week booked twice as much new business as it shipped, while specifications exceeded shipments by one-half. Soft steel bars are firm at 2.10c, Chicago, but the price situation lacks a good cushioning of railroad business.

Rail steel business still comes largely from the building industry, though the fall lines are picking up. Rail steel bars are unchanged at 2.00c to 2.10c, Chicago. Bar iron is holding at 1.90c, Chicago, with several makers experiencing slight improvement in bookings.

Boston, Oct. 6.—Recovery is noted in demand for steel bars at Boston and sales total of the week, while less than the September average, exceeds the previous week by 15 to 20 per cent. For the first time in several weeks the market appears firm at 2.00c for any delivery.

Philadelphia, Oct. 6.—Some steel bar mills which recently asked specifications three to four weeks ahead now are able to ship promptly, though others still are behind. Quotations of 1.90c, Pittsburgh, are more frequent. The Pennsylvania and Baltimore & Ohio railroads and practically all large consumers have this price. At the same time considerable business still is bringing 2.00c. Iron bars have been sold even lower than steel, carloads going regularly at 1.80c, Pittsburgh.

Pittsburgh, Oct. 6.—Bar mills are entering fourth quarter with specifications practically all in on third quarter contracts. Furthermore most regular customers of bar finishers in this territory have signed fourth quarter contracts and some already have sent in partial or full specifications against October needs. Spot buying continues small and while occasionally a 1000 to 2500-ton lot comes up, the majority of inquiries are for 100 to 500 tons. One lot of 2300 tons is pending here but even on tonnages of this size, 2.00c appears to be the universal quotation.

Refined iron bar demand appears to be spreading and some attractive business is about to come out from the railroad car shops. Prices start at 3.00c.

Cleveland, Oct. 6.—A continued good inflow of new bar business is making deliveries more extended. Most of the leading mills now cannot promise deliveries under 30 to 45 days. Buyers are specifying contracts freely and mill tonnage thus far in October compares favorably with September which showed a substantial increase. Prices are well established on the basis of 2.19c, Cleveland, or 2.00c Pittsburgh.

Cold Finished Steel

Most Business Going at Competitive Price

Pittsburgh, Oct. 6.—Bookings of cold-finished bars continue at 2.40c, which prevails when tonnage is attractive. Some 2.50c prices still are in force however, some makers refusing to meet 2.40c, which originated with one manufacturer who had been denied business and was told the tonnage was going elsewhere at a lower price. October starts with business at a higher rate than September, when orders were 25 to 30 per cent greater than in August.

Hoops and Bands

Orders Continue Satisfactory and Price Is Firm

HOOP PRICES, PAGE 910

Pittsburgh, Oct. 6.—Business from well scattered sources is coming to makers of hoops and bands, with automotive products still holding the lead. No difficulty is experienced in obtaining full 2.40c, and producers are looking for an early price advance.

Chicago, Oct. 6.—Demand for bands and hot-rolled strip continues to be relatively greater than for other steel products and the market shows decided tendency towards strength.

Structural Shapes

New York and Chicago Dominate Market—Awards at High Level—Fabricated Prices Stiffen—25,000-ton Project Up

NEW YORK and Chicago continue to dominate structural activity. In the former city a 25,000 to 30,000-ton office project, previously noted, is going ahead. Bookings will set a new record in 1925. Subway work there alone has taken 60,000 tons this year and 50,000 tons more is expected before Jan. 1, 1926. The leading interest at Chicago has bookings 20 per cent above the same period of 1924. A 6700-ton bridge was placed this week at Pittsburgh and an 8000-ton hotel in New York .

Fabricated prices have stiffened slightly in the past few weeks. Mills also are in better position and deliveries by some are three and four weeks deferred. Leading Pittsburgh mills are advancing plain material to 2.00c Pittsburgh.

STRUCTURAL SHAPE PRICES, PAGE 910

New York, Oct. 6.—Overshadowing all else in the local structural market is an inquiry for 25,000 to 30,000 tons for the Todd, Robertson & Todd Engineering Corp. office building, at Lexington avenue and Forty-fourth street, previously noted as under active contemplation. Bids are to be in by Oct. 14. New orders and inquiries are not quite as numerous as a week ago. Fabricated material prices, following the improvement a couple of weeks or so ago, are unchanged. Shapes are easy at 1.90c Pittsburgh, on the average run of business.

Structural buying in the Metropolitan district gives every indication of this year exceeding the record-breaking year of 1924. Estimates are that approximately 450,000 tons have been placed so far; at the same time, substantial work is in prospect. Approximately. 50,000 tons of subway work is definitely scheduled to come out during the remainder of this year. So far, there has been approximately 60,000 tons placed. About 100,000 tons of subway work are scheduled for action next year.

Chicago, Oct. 6.—Structural awards continue at a pace exceeding last spring. American Bridge Co. business in the Chicago district in the first nine months has been 20 per cent over the corresponding period of 1924. Chicago building permits in the first nine months totaled $278,532,750, a gain of $57,000,000 over last year and $32,000,000 over 1923, the previous high. Plain material is quoted at 2.10c, Chicago.

Boston, Oct. 6.—Structural contracts placed at Boston during the week total close to 3000 tons and much new work is coming up. Prices are exceptionally firm at 1.90c Pittsburgh or 2.265c, delivered. Fabrication and erection prices are advancing as New England plants become booked further and further ahead.

Philadelphia, Oct. 6.—The range in prices on plain shapes continues 1.90c to 2.10c, eastern mill, or 1.80c to 2.00c, Pittsburgh, but the minimum figures are tending to move upwards. Mill orders are accumulating so consumers now are specifying three to four weeks ahead.

Pittsburgh, Oct. 6.—Structural shape awards locally are large this week including the Point bridge, 6700 tons, and the new plant for the Pittsburgh Crucible Steel Co., 1600 tons. Inquiries are commencing to drop off somewhat and estimating departments are not nearly so busy as they were in July and August. Plain material still is quoted at 1.90c to 2.00c.

Cleveland, Oct. 6.—Dullness continues in the local structural market. No tonnages of size were placed and inquiries were lacking last week. The leading producer has advanced plain material to 2.00c Pittsburgh and one independent mill has done likewise. Fabricated prices are spotty.

Cincinnati, Oct. 6.—Structural awards in this district the past week involved few important tonnages. Activity in the market is more pronounced and several large projects are pending. Industrial demand has shown a noteworthy improvement in recent weeks. The price on plain material continues at 2.00c Pittsburgh.

Awards Compared

	Tons
Awards this week	55,920
Awards last week	26,306
Awards two weeks ago	35,117
Awards this week in 1924	33,032
Average weekly awards, Sept.	29,696
Average weekly awards, 1925	32,409

CONTRACTS PLACED

8000 tons, Savoy Plaza hotel, Fifth avenue, New York, to American Bridge Co.

6700 tons, Point bridge, Pittsburgh, to the Fort Pitt Bridge Co., which was low bidder at $907,685.80.

3500 tons, Leftcourt loft building, Broadway and Thirty-ninth street, New York, reported awarded unnamed fabricator.

3100 tons, building for the *Cincinnati Enquirer*, Cincinnati, O., reported awarded to the Massillon Bridge & Structural Co., by the Fuller Construction Co., general contractor.

3000 tons, Harriman bank, Fifth avenue and Forty-fourth street, New York, to Levering & Garrigues Co.

3000 tons, fibre silk works for the Du Pont interests, Buffalo, to McClintic-Marshall Co.

2500 tons, elevator for Reading Co., Reading, Pa., to Bethlehem Fabricators, Inc.

2105 tons, girder and I-beam spans for Great Northern railroad, to American Bridge Co.

1700 tons, top addition to Standard Oil Co. building, Chicago, to Vanderkloot Steel Works.

1600 tons, new building at the Park works of the Pittsburgh Crucible Steel Co., Pittsburgh, to the American Bridge Co.

1500 tons, 15-story apartment, West Eighty-sixth street, New York, to A. E. Norton Co.

1400 tons, junior high school, Albany, N. Y., to the Phoenix Bridge Co.

1230 tons, hotel in East Fifty-ninth street, New York, to the Easton Structural Steel Co.

1000 tons, office building, 17 John street, New York, through Starrett Bros., general contractors, to Levering & Garrigues Co.

918 tons, Shrine temple at Des Moines, Iowa, to St. Louis Structural Steel Co.

800 tons, Calaveras Cement Co. plant, San Andreas, Calif., to Minneapolis Steel & Machinery Co.

700 tons, apartment, Great Neck, Long Island, N. Y., to Porcupine Co.

700 tons, 15-story apartment, West Seventy-eighth street, New York, to the Easton Structural Steel Co.

600 tons, Brisbane office building, 5 East Fifty-seventh street, New York, to the American Bridge Co., through Dwight P. Robinson & Co. Inc., 61 Broadway, general contractor.

600 tons, additional for Federal Rubber Co., Cudahy, Wis., to American Bridge Co.

500 tons, Junior high school, New Bedford, Mass., to an unnamed fabricator.

500 tons, miscellaneous work, including 426 tons for the Halsted bridge over the Susquehanna river for the state of Pennsylvania, to the Pittsburgh-Des Moines Steel Co. through the Du Bois Construction Co., general contractor.

500 tons, building, Willoughby and Bridge, Brooklyn, N. Y., to Hay Foundry & Iron Works.

500 tons, public library, Bridgeport, Conn., to Porcupine Co.

460 tons, theater, Woodside, Long Island, N. Y., to George A. Just Co.

430 tons, power house at Anderson, Ind., to Indiana Bridge Co.

465 tons, bridge work for Great Northern railroad, to Wisconsin Bridge & Iron Co.

450 tons, loft at West Thirty-sixth street, New York, to Taylor-Fichter Steel Construction Co.

400 tons, eight miscellaneous projects, to the Palmer Steel Co.

400 tons, office building, White Plains, N. Y., to the Harris Structural Steel Co.

400 tons, apartment, Lexington avenue, New York, to A. E. Norton, Inc.

370 tons, Abraham Lincoln school at Rockford, Ill., to the American Bridge Co.

357 tons, Lloyds theater and department store, South Bend, Ind., to unstated fabricator.

350 tons, apartment building for Kilsythe Realty Co., 250 Beacon street, Boston, to New England Structural Co.

340 tons, McKlinloc dormitory, Cambridge, Mass., to the New England Structural Co. included in blanket award of 2000 tons awarded last week.

300 tons, theater, Flatbush avenue, Brooklyn, N. Y., to the George A. Just Co.

300 tons, Coonan theater, Worcester, Mass., to the Eastern Bridge & Structural Co.

300 tons, Knoek building, Hartford, Conn., to Bethlehem Fabricators, Inc.

300 tons, Methodist church, Worcester, Mass., to the Porcupine Co.

264 tons, garage and station for Great

Northern Transit Co., Minneapolis, to Minneapolis Steel & Machinery Co.
250 tons, athletic building, Bates College, Ware, Mass., to New England Structural Co. General contract to H. P. Cummings Construction Co., Ware, Mass.
250 tons, Giant Portland Cement Co. plant, Egypt, Pa., to McClintic-Marshall Co.
250 tons, theater, Middletown, Conn., to the Berlin Construction Co.
250 tons, garage, Garfield place and Seventh street, Brooklyn, N. Y., to George A. Just Co.
250 tons, slag product plant for the Clinton Iron & Steel Co., Pittsburgh, to the John Eichleay Jr. Co.
215 tons, Bond building, Manchester, N. H., to the Palmer Steel Co.
200 tons, car barn, Waterbury, Conn., to the Belmont Iron Works.
200 tons, Miles Standish apartment, Boston, to the Palmer Steel Co.
200 tons, Wellesley dormitory, Wellesley, Mass., to unnamed fabricator.
200 tons, garage, 249 Adelphia street, Brooklyn, N. Y., to George A. Just Co.
195 tons, Vogue theater, Chicago, to Garden City Iron Works.
175 tons, Gloucester Electric Light Co. plant addition, Gloucester, Mass., to New England Structural Co. General contract to H. Wales Lines Co., Meriden, Conn.
167 tons, Puyallup river bridge, State Road No. 5, Washington, to Wallace Equipment Co.
154 tons, apartment, Sutter and Leavenworth streets, San Francisco, to Schraders Iron Works.
125 tons, Rivoli theater, Boston, to New England Structural Co. General contract to M. Shapiro & Sons Co., New York.
150 tons, theater, Winsted, Conn., to Bethlehem Fabricators, Inc.
150 tons, Leroy apartments, Rochester, N. Y., to R. S. McMannus Steel Construction Co.
125 tons, four plant buildings for the Underwood Machine Co., at Sockanosset, R. I., to New England Structural Co.
115 tons, Sacred Heart church, Springfield, Mass., to G. Haarman & Co., Inc.
110 tons, Straus dormitory, Harvard university, Cambridge, Mass., to New England Structural Co. General contract to Whidden-Beekman Co., Boston. Included in 2000 ton award last week.
100 tons, Kresge store, Troy, N. Y., to the Eastern Bridge & Structural Co.
Tonnage unstated, Pacific building, Yamhill and Fifth streets, Portland, Oreg., to Poole & McGonigle Co.

CONTRACTS PENDING

25,000 to 30,000 tons, office building, Lexington avenue, between Forty-third and Forty-fourth streets, New York, for Todd, Robertson & Todd Engineering Corp., 347 Madison avenue, New York, owner and builder, bids to be closed Oct. 14; this project was mentioned in a previous issue as contemplated.
4500 tons, French office building, Fifth avenue and Forty-fifth street, New York, award expected shortly.
2400 tons, hotel, Market, San Pablo and Twenty-eighth streets, Oakland, Calif.; bids being received.
2000 tons, apartment, Fifty-fourth street and Sixth avenue, New York; pending.
1600 tons, apartment, Sixth avenue and Fifty-fourth street, New York bids asked.
1500 tons, bank for Seamens institute, Pearl and Wall streets, New York; pending.
1500 tons, apartment, Jersey City, N. J.; pending.
1400 tons, shapes for export to Philippine Islands; bids being received.
1400 tons, 20-story Hohauser apartment, 341 West Eighty-sixth street, New York; pending.
1200 tons, Bing & Bing apartment, Fifty-sixth street and Park avenue, New York; bids in Oct. 20.
1000 tons, Herzog apartment, 430 East Fifty-street, New York; pending.
750 tons, plant for Salada Tea Co., Boston, bids being taken.
700 tons, approximately for school No. 101, Queens, Long Island, N. Y.; pending.
540 tons, auditorium, Sacramento, Calif.; new bids in.
500 tons, highway bridge over the Susquehanna river, at Halstead, Pa.; bids asked.
500 tons, highway bridge over Gila river, Borderland highway, Phoenix, Ariz.; bids being taken.
450 tons, alteration to school No. 27, Queens, Long Island, N. Y.; pending.
400 tons, hotel at Saranac, N. Y.; pending.
400 tons, apartment, 162 East Eighteenth New York pending.
300 tons, trade school, Bridgeport, Conn.; pending.
300 tons, plant addition, Selby Shoe Co., Ironton, O.; bids close Oct. 10.
300 tons, garage, 236 West Seventeenth street, 254 tons, theater, Telegraph avenue and Fortieth streets, Oakland; bids in.

Concrete Bars

September Awards Exceed 1925 Average at Chicago—General Buying Heavier

PORTENDING bad weather has caused acceleration in concrete bar buying in some centers. Most tonnages for fall construction are being rushed through. Road work in the northern states is practically completed for the year. Mill quotations have stiffened at Buffalo. Inquiry continues steady although tonnages involved still are small.

REINFORCING BAR PRICES, PAGE 910

Chicago, Oct. 6.—Awards of reinforcing bars display a slight acceleration due to the approach of the deadline when fall work must be under way. September awards were higher than the monthly average so far this year. Estimates of pending work range as high as 25,000 tons, much of which will be placed in the next few weeks or put over until spring. The warehouse quotation on reinforcing bars continues 2.60c, Chicago.

Boston, Oct. 6.—Better inquiry is reported for concrete bars. Prices for round tonnage lots still are soft but small lots demand the full warehouse level of 3.00c Boston.

Buffalo, Oct. 6.—Disappearance of the old quotation of 2.165c for reinforcing bars from mills is reported this week and the fact that some larger tonnages have been booked here at 2.265c. The price on stock bars is unchanged at 2.65c. Sales during the first week of this month were heavy. Road work is about done for this season.

Pittsburgh, Oct. 6.—Concrete bar market is less active than in several weeks except for small tonnages. These are numerous involving 5 to 25 tons. On larger work the tendency to defer action is more widespread although one or two lots involving up to 400 tons are current here. The general quotation is 2.00c on new billet bars.

Cleveland, Oct. 6.—Activity has decreased in concrete bar buying and the market is dull again. No awards or inquiries of much tonnage were acted upon last week. A local company still is figuring on 800 tons for Florida work. New billet bars continue 2.00c Pittsburgh to 2.20c, Cleveland. Rail steel bars hold at 1.80c to 1.90c mill. Stock bars are 2.50c Youngstown to 3.10c Cleveland.

Cincinnati, Oct. 6.—Projects involving large tonnages of reinforcing bars are more numerous. While awards the past week were confined to small tonnages, in the aggregate they represented satisfactory business. Considerable road work is pending in this district. New billet bars still are quoted 2.00c Pittsburgh.

Awards Compared

	Tons
Awards this week	3,857
Awards last week	3,435
Awards two weeks ago	3,985
Awards this week in 1924	3,181
Average weekly awards, Sept	5,463
Average weekly awards, 1925	6,232

CONTRACTS PLACED

630 tons, Picadilly theater, Chicago, to Calumet Steel Co.
400 tons, Niles Center, Ill., sewage disposal plant, to Inland Steel Co.
375 tons, Flood Control works, Edenberg, Texas, placed with unnamed interest.
350 tons, Peck building, Chicago, to Truscon Steel Co.; plans by A. S. Alschuler, 28 East Jackson boulevard, Chicago.
350 tons, Pelham apartments, Brookline, Mass., to Concrete Steel Co.
300 tons, addition to River road plant, Buffalo General Electric Co., to unnamed Buffalo fabricator.
260 tons, Shrine Temple, Des Moines, Iowa, to Concrete Engineering Co.
250 tons, school at Oshkosh, Wis., to American System of Reinforcing.
230 tons, hotel and store, San Jose, Calif., for St. Claire Realty Co., placed with unnamed interest.
170 tons, Naval hospital, Canocoa, P. I., placed with unnamed interest.
150 tons, Graham building, Aurora, Ill., to Olney J. Dean & Co.
112 tons, Salmon river bridge, Salmon river, Idaho; to unnamed interest.
250 tons, Abraham Lincoln school, Rockford, Ill., to Concrete Engineering Co.
100 tons, addition to Western Clock Co., La Salle, Ill., to Hugh J. Baker & Co.
100 tons, new Queens Daughters building, St. Louis, to Laclede Steel Co.
Tonnage unstated, Pacific building, Yamhill and Fifth streets, Portland, Oreg., to Pacific Coast Steel Co.

CONTRACTS PENDING

1600 tons, building for New England Confectionary Co., Boston; general contractor, Hegeman-Harris Co.
600 tons, plant for Safe Cabinet Co., Marietta, O.; bids in.
400 tons, garage building, Pittsburgh; bids being taken.
150 tons, addition to Pomerene hall, Ohio State university, Columbus, O.; bids closed.
150 tons, addition, American Laundry Machinery Co., Cincinnati; general contract awarded to Ferro Concrete Construction Co.
100 tons, loading platform for Chevrolet Motor Car Co., Cincinnati, bids in.
100 tons, office for Southern railway, Charlotte, S. C.; bids close Oct. 20.
100 tons, plant for Salada Tea Co., Boston; bids being taken.

Rails, Cars

Rail Programs Advancing With About 200,000 Tons Involved at Chicago—Cars Also More Active

DEVELOPMENTS by railroads in formulating 1926 rail programs reveal that nearly 250,000 tons will be out shortly with 125,000 tons of rail fastenings. Louisville & Nashville closed on 68,250 tons of rails to Tennessee. Car buying also is more active. Louisville & Nashville raised its order to 2250, placing another 1000 gondolas. Illinois Central bought 60,000 tons.

RAILROAD TRACK MATERIAL PRICES, PAGE 910

New York, Oct. 6.—Featuring the local car market is an inquiry for 3000 box cars for the New York Central. Orders are small and scattered. Recent improvement in locomotive buying is being maintained. Baldwin Locomotive Works has closed on seven locomotives for Brazil and nine electric locomotives for Chile. Westinghouse Electric & Mfg. Co. has booked four electric locomotives for the Chicago, South Shore & South Bend. Inquiries include 10 for the Denver & Rio Grande Western, four for the Atlantic & West Point, and four for the Tennessee Central.

September freight car awards totaled 7905, the largest month of the year, but considerably below the total of 27,630 cars placed in the same period of 1924. Further comparisons follow:

September	7,905
August	2,875
July	800
June	1,835
May	6,985
April	5,060
March	4,730
February	5,510
January, 1925	1,695
1923 total	103,487
1924 total	144,425

Pittsburgh, Oct. 6.—Small lots still rule in light rails although in recent weeks the number of buyers has increased. The tendency to sell light rails on a gross ton basis appears to be growing. While the pound price has been 1.70c, prices as low as 1.60c have been put out in order to test the competition encountered on the gross ton basis. Against the 1.70c price, which is $38.08 per gross ton, the odd cents were dropped, but now a $36 gross ton price is appearing. Some makers have taken business at 1.60c, or $35.84 per gross ton in order to receive a share of the business going at the $36 figure.

Chicago, Oct. 6.—Unusual secrecy shrouds the railroad situation both as regards cars and track material. As has been the case for 60 days railroad buying promises to be heavy but the carriers are nebulous concerning their definite needs.

It is stated that 100,000 tons of rails may be considered as booked by local rail mills, although definite allocations in most instances have not been made. Rail inquiry involving 200,000 tons is before the market while between 200,000 and 250,000 tons is expected in the market shortly. This expected inquiry includes tonnage of eastern roads which will be apportioned to Chicago makers. The tonnage of fastenings going with this rail program is estimated from 100,000 to 125,000 tons. So far the Chicago & North Western, Chicago, Milwaukee & St. Paul, Santa Fe and Northern Pacific are the carriers apparently the farthest advanced with their programs. Louisville & Nashville has closed on 68,250 tons of 100-pound rails to the Tennessee Coal Iron & Railroad Co.

Illinois Central system placed 60,000 tons of rails, 32,000 tons going to Illinois Steel Co. and 28,000 tons to the Tennessee Coal, Iron & Railroad Co. Florida East Coast closed on 25,000 tons and Carolina, Clinchfield & Ohio and Alabama & Vicksburg 8000 tons each.

The Louisville & Nashville has placed 1000 additional gondolas with the Pressed Steel Car Co. The Baltimore & Ohio has placed 1500 box car bodies instead of 1000. The Frisco has added 500 composite gondolas to the 3000 box cars it has been inquiring for. The Atlantic Coast Line is in the market for 500 composite gondolas.

ORDERS PLACED

Louisville & Nashville railroad, 1000 gondolas, award of 500 gondolas to Pressed Steel Car Co. as announced last week increased to 1500. 26 passenger cars to American Car & Foundry Co., and 14 to Pressed Steel Car Co.

Chesapeake & Ohio, 125 instead of 100 caboose cars to Standard Tank Car Co., 25 cabooses for the Hocking Valley to its shops at Logan, O., and 10 coaches to Bethlehem Steel Co.

Chateaugay Ore & Iron Co., 10 ore cars, to the American Car & Foundry Co.

New York, New Haven & Hartford, 35 multiple unit cars, to the Osgood-Bradley Car Co.

Armour & Co., 300 refrigerator car underframes, to the Bettendorf Co.

Montour railroad, 500 hopper cars, awarded, reported going to Standard Steel Car Co.

ORDERS PENDING

New York Central, 3000 box cars; bids asked.

Equitable Equipment Co., 50 flat cars for export; pending.

Cerro de Pasco Copper Co., 40 ore cars; bids asked.

Wire

General Buying Is Fairly Good But Prices Show Further Weakness on Nails

PRODUCERS of wire and wire products are booking excellent orders from manufacturers and nail demand is fair, though somewhat lessened. Prices are much less satisfactory in all markets. Present nominal prices are considered too low, but at the same time even lower are being quoted on nails to an extent where some producers refuse to compete.

WIRE PRICES, PAGE 910

Pittsburgh, Oct. 6.—Fairly large orders for plain wire from manufacturers, occasional orders for carloads of nails, and some mixed carloads are being received by mills in slightly increased volume. Nail business on which some southern Ohio manufacturers are competing heavily, is going so low that local makers are disinterested. Makers say present prices of 2.50c on plain wire and 2.65c on wire nails are too low, and the necessity for early advances is being stressed. Wire mill operations are on about a 65 per cent basis. Some 1.80c prices have appeared in cement-coated nails, as against 1.85c, the regular market quotation.

Belfont Steel & Wire Co., Ironton, O., booked more nail and wire business in September than in any month this year.

Chicago, Oct. 6.—The wire and nail market continues to show gradual improvement in tonnage but the price situation continues as unsatisfactory to mills as at any time since midsummer. Mill operations will not average over 60 per cent. Manufacturing lines are moving relatively better than jobbing lines. There is a tendency on the part of the mills to recognize the larger retail sellers of wire products who can buy carloads at a time. Prices are 2.55c, Chicago or western mill for plain wire, and 2.70c for wire nails.

Boston, Oct. 6.—Wire and wire rod sales continue active with the price firm at 2.65c Worcester for plain wire. Nail demand is far below normal.

Philadelphia, Oct. 6.—Wire continues firm at 2.50c, Pittsburgh and while nails usually are 2.65c, Pittsburgh, 2.60c again is more in evidence on competitive tonnages.

Nonferrous Metals

And Producers' Stocks Are Light—Copper Metals Continue to Move In Heavy Volume and Tin Weak But Lead Firm and Zinc

Prices of the Week

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Spot Tin, N. Y. Straits	New York Lead	Lead St. Louis East	St. Louis Zinc	Aluminum 98-99%	Antimony Spot	Nickel Ingot
	Cents per pound									
Sept. 30	14.37½	14.62½	13.75	60.00	9.55	9.25	7.87½	27.00	17.25	34.00
Oct. 1	14.45	14.55	13.87½	60.40	9.55	9.25	7.90	27.00	17.25	34.00
Oct. 2	14.50	14.65	13.87½	60.25	9.55	9.25	7.97½	27.00	17.25	34.00
Oct. 5	14.40	14.62½	13.80	60.00	9.60	9.35	8.02½	27.00	17.25	34.00
Oct. 6	14.37½	14.50	13.72½	60.50	9.60	9.35	8.07½	27.00	17.25	34.00

NEW YORK, Oct. 6.—Prices of nonferrous metals went up during the past week and then eased again on copper and tin, while lead remained strong and zinc continued to climb. Shipments of all metals continue large and stocks in the hands of producers are light.

Copper—Buying of the red material has been moderately active for domestic account at times lately and at other times it has been unusually dull, while the foreign market has remained in its slowest state for a long time. The latter condition is the cause of the wavering market. Domestic shipments, though big, are not sufficient to sustain the market in continual strength without support from Europe. The fact that stocks of copper in this country are light, prevents the market from sagging a great deal at present.

Rolled Brass and Copper—Mill products have been selling a little more actively than raw metal, but the buying is hand-to-mouth and not heavy. Shipments of most goods can be had in three weeks, with some things in two weeks from certain mills but other products taking six, the latter being mostly copper and nickel silver sheets. Lead and zinc sheets are in a strong market, but in brass and copper products a cut has been expected.

Zinc—This metal is the strongest of the nonferrous group just now, some prices on prime western being up to 8.10c E. St. Louis. Fair buying has been done recently by galvanizers for October but just now most business is from Europe and little from home.

Tin—Prices went up rapidly a few days ago and a good amount of buying was done by users as well as by dealers but as soon as buying slackened, the market began to ease on account of the height to which it had risen. A shrinkage of metal in sight all over the world was the cause, but it is thought shipments will improve this month from the Orient.

Aluminum—The light metal has changed little, with moderate buying, and shipments continuing large. The scrap and secondary markets are not so strong as they were.

The regular meeting of the Golden Gate chapter of the American Society for Steel Treating was held in Los Angeles on Wednesday, Sept. 16. E. Little, superintendent of the Hoover Spring Co., San Francisco, presented a paper on "How Automobile Springs Are Made." C. S. Moody, metallurgist of the Caterpillar Tractor Co., San Leandro, Calif., also addressed the meeting.

Reduce Billet Duty

Washington, Oct. 6.—Sustaining a protest of San Francisco importers, the United States customs board has ordered reduction in the rate of duty on certain steel billets imported during the life of the tariff act of 1913. According to the record, the merchandise, consisting of round pieces of steel, 10 to 12 feet long and 5½ and 7½ inches in diameter, was assessed with duty at 8 per cent ad valorem under paragraph 110, of the 1913 act, as steel bars. The importers contended for free entry under paragraph 613 of the same act, as steel billets, which contention was upheld.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	19.12½
Copper, hot rolled	22.75
Zinc, ga. 9 to 17	10.50
Lead full sheets (cut ¼c more)	13.00 to 13.50
Aluminum, bright flat, up to 10 gage	37.50
SEAMLESS TUBES	
High brass	23.75
Copper	24.75
RODS	
High brass (round ⅝ to 2½-inch)	16.62½
Naval brass	19.62½
WIRE	
Copper	16.25 to 16.37½
High brass	19.62½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.25
Chicago	9.25 to 9.50
Cleveland	9.25 to 9.50
HEAVY YELLOW BRASS	
New York	7.25
Chicago	7.75 to 8.25
Cleveland	7.50 to 7.75
ZINC	
New York	4.50
Cleveland	4.50 to 4.75
HEAVY COPPER AND WIRE	
New York	12.00
Chicago	11.25
Cleveland	11.25 to 11.50
RED BRASS TURNINGS	
New York	8.50
Chicago	8.75
Cleveland	8.50 to 8.75
YELLOW BRASS TUBING	
Cleveland	7.50 to 7.75
LIGHT COPPER	
New York	9.50
Chicago	10.25 to 10.50
Cleveland	9.50 to 9.75
LIGHT BRASS	
Chicago	7.25 to 7.50
Cleveland	5.75 to 6.00
ALUMINUM	
Borings, Cleveland	12.00 to 15.00
Old sheet and cast, Cleveland	17.00 to 20.00
Clippings, Cleveland	21.00 to 22.00

Secondary Metals

Remelt aluminum No. 12	23.50 to 24.00
Brass ingot 85-5-5-5	12.00 to 12.25

Coke By-Products

Distillates Easier—Trading Generally Is Light

New York, Oct. 6.—Influenced by the low prices in gasoline, benzol has eased off 1 cent. Pure benzol is now 24 cents delivered in tanks and 29 cents in drums and 90 per cent, at 23 cents in tanks and 28 cents in drums. Demand is fair. Shipment is available within a week or ten days. some sellers of solvent naphtha and xylol are virtually out of the market for the remeinder of the year. Xylol in tank lots for future shipment is down 1 cent, being quoted at 26 cents delivered, while drum lots are up 1 cent, now holding at 32 cents. Solvent naphtha is quoted at 26 cents in tanks and 31 cents in drums.

Phenol for nearby and future shipments is a trifle easier, holding at around 22 cents, producers' plants. Naphthalene, in flakes, is unchanged at 5½ cents to 6½ cents works, and in balls at 6½ to 7½ cents, works. Trading is slack.

Trading in sulphate of ammonia continues light, with prices at $2.80 to $2.85 delivered for material for domestic account and $2.75 port for material in double bags for export. This latter figure is nominal.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots	Spot	Contract
Pure benzol	$0.24	
Toluol	0.26	
Solvent naphtha	0.26	(nominal)
Commercial xylol	0.26	(nominal)
Per Pound at Producers' Plants		
Phenol	0.23 to 0.24	0.22 to 0.23
Naphthalene flakes	0.05½ to 0.06½	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½	0.06½ to 0.07½
Per 100 Pounds Delivered		
Sulphate of ammonia	$2.82½	

Coast Trade Is Steady

Increase in Volume of Buying while Prices Remain Unchanged—Building Is Feature

BY AIR MAIL

SAN FRANCISCO, Oct. 3.—Although the volume of sales of iron and steel products is increasing prices have shown little evidence of strengthening and in some lines the level remains at a low point. Construction activity is keeping up and the total for the year promises to be close to the heavy total of last year. In Los Angeles for the year up to Sept. 22, 2787 building permits had been issued with a value of $7,245,212, compared with 2649 permits and a valuation of $8,256,884 for the corresponding period in August and 3365 permits and an estimated value of $10,054,933 for the same period in 1924.

Pig Iron and Coke

During the past week one importer received about 120 tons of Japanese iron and a small lot of Chinese iron, but it could not be ascertained whether this material had been brought in on speculation or to apply against comtracts previously taken. The largest inquiry that has been before the trade in some weeks call for 1000 tons of iron running 2.75 to 3.25 in silicon with an option of taking 500 tons more at the same figure. The inquiry has been put out by the Whiting-Mead Commercial Co. in Los Angeles. No change in price is noted. The Southern Pacific Co. has taken bids on 500 tons of coke. Other coke sales have been confined to relatively small spot lots.

Bars, Plates and Shapes

Concrete bar awards this week aggregated over 800 tons, the largest involving 375 tons for the Flood Control Works at Edenberg, Texas, placed with an unnamed interest. Awards during the past four or five weeks have comprised less than 100 tons for the most part. These smaller projects, however, have been going through at a rapid pace with the result that the total tonnage has been satisfactory. Out-of-stock prices are anything but firm. One interest this week received a quotation of 2.45c f.o.b. San Francisco on a fair sized tonnage. Sales have been made at 2.65c and 2.75c. The general run appears to be 2.80 to 2.85c with 3.00c as a maximum on car load lots. On less than carload lots 3.35c is the top. Little improvement is noted in demand for mild steel bars, the local mill price now being 2.40c f.o.b. Tonnages continue to be confined to small lots for prompt shipment. The Southern Pacific Co. will open bids Sept. 8 for a carload.

The general opinion of the trade here in regard to the prices at which the 75,000 tons of plates for the Oakland pipe line project was placed is 2.15c c.i.f. but on account of the extras for width and quality it is extremely difficult to determine the base price as it is understood that full extras were not exacted in all cases. Awards of the week exceeded 800 tons and included 500 tons for dredge pipe placed with the Pacific Coast Engraving Co. and 225 tons for small tanks for the Associated Oil Co. at Salinas, Calif., with the Steel Tank & Pipe Co. The biggest inquiry now up for figures involves 1500 tons for a penstock for the San Joaquin Light & Power Co. bids on which will be opened Nov. 1. Pending business totals over 2000 tons. Prices now range from 2.25c to 2.30c.

Activity in the structural shape market is confined to small lots of less than 100 tons with the exception of three awards, the largest involving 800 tons for the Claveras Cement Co. plant at San Andreas which was taken by the Minneapolis Steel & Machinery Co. Pending contracts are in excess of 5600 tons. During the week bids were asked on 2400 tons for a hotel in Oakland and 1400 tons for shipment to the Philippines. The range of prices is now 2.30c to 2.35c c.i.f. Coast ports.

Other Finished Material

Los Angeles has placed 274 tons of 2-inch standard black pipe and 6-inch Matheson joint pipe with Los Angeles pipe distributors. Demand for oil country goods has fallen off due to the recent reduction in crude oil prices which in turn has resulted in numerous pumping wells in the older fields going idle. The only award for cast iron pipe during the week involved 100 tons for Vancouver, B. C. which went to Gordon & Belvea, Inc., agents for French material. Demand at present is limited to small lots of less than 400 tons with the exception of 3844 tons for Los Angeles, bids on which have just been opened.

The Key System Transit in Oakland has placed 250 kegs of track spikes with the Bethlehem Steel Co. but have taken no action yet on inquiry for 100 tons of 70-pound rails.

Northwest Trade Slow

SEATTLE, Oct. 1.—Improvement in general business conditions in the Pacific Northwest is being reflected in various branches of trade. Buying, however, continues light and as a rule is confined to immediate requirements. The volume of iron and steel business is not more than normal.

The feature of the week was the award to Twohy Bros., of Seattle, and to J. F. Shea, Portland, of contracts for the initial portions of the East bay water project, California. Awards of $12,000,000 were made of which the Portland and Seattle firms obtained contracts totaling more than $9,000,000. Road and bridge awards amounting to $200,000 were made during the week by the Oregon state highway commission. The bridge involved is to span the Crooked river.

Bars, Plates and Shapes

Competition of foreign bars is negligible in this territory although at Portland imported material is more or less in evidence. The local mill reports an average run of new business and the Seattle plant is on the same operations. New business is practically all in small tonnages and no large contracts are pending. Prices are unchanged at 2.45c.

Plates and shapes are unchanged in price at 2.30c and 2.35c respectively. No large plate jobs are pending here. Demand for light plates is fairly good, considerable repair work and tank construction being under way. No large structural jobs are in view in Oregon and Washington, the main demand for shapes being due to extensive bridge construction.

Sub-contracts for the Pacific building, Yamhill and Fifth streets, Portland, have been awarded. The Pacific Coast Steel Co. will furnish the reinforcing steel and Poole & McGonigle the structural steel.

Finished Materials

September business with the jobbing warehouses totals about the same volume as August. There is an improved demand from the country districts as harvesting approaches an end. However, buying is confined to small lots and no disposition to place forward business is indicated. Sheets and light plates are in good demand. In this district prices are unchanged and reasonably firm.

Bids have been opened by city officials at Vancouver, B. C., for approximately 9000 feet of heavy iron pipe for the submerged portion of the Seymour water main. Gordon & Belyea submitted the lowest bid of $107,500. This job calls for special size and lengths of heavy cast iron pipe which will have to be made according to special specifications. The tonnage involved is between 1200 and 1500 tons.

Old Materials

While there is practically no turnover in No. 1 cast iron scrap the steel scrap market is slightly firmer. The main buying interest has advanced the price 50 cents per ton.

The Market Section

Britain on Competitive Basis

Steel Prices Nearer Level of Foreign Material, More Orders Are Taken by Domestic Mills—Structural and Shipbuilding Demand Expands Slightly—Galvanized Sheets Booked Three Months Ahead

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Oct. 6.—(*By cable*)—British steel prices are receding as a result of keen foreign competition for all the small orders that are appearing. Prices of domestic and foreign material are closer than for some months. Orders for structural and shipbuilding steel are expanding slightly. The British builders show more preference for the domestic product.

Exports of pig iron from Middlesbrough in September amounted to 11,900 tons, 2000 tons less than was shipped in August.

Shipments to the United States in September totaled 2450 tons. Steel exports from the port last month totaled 33,706 tons, nearly all shipments going to India and the colonies.

Galvanized sheet makers are booked for three months. The market is active.

French pig iron and steel exports are progressively active.

British Steel Trade Far From Comfortable

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Sept. 25.—(*European Staff Service*)—The recurrence of the coal crisis is especially unwelcome to the iron and steel trades, whose burdens are already intolerable. Any stoppage would, of course, be disastrous, especially as the trade is making gallant and self-sacrificing efforts to recover its footing in the world's markets.

The only business in the market, at present, relates to structural steel. New contracts are continually coming out and some engineers have several months work on hand. As rather larger tonnages are involved, it is concluded that municipal and other bodies consider the lower prices quoted justify them in going forward with various schemes. New orders for locomotives and a fair amount of rolling stock are still coming forward, this week's bookings including some engines for Australia, India and South America. The British railways continue to place fresh orders for locomotives and rolling stock. The absence of rail orders seems to confirm the statement made a short time ago that the buying in the early part of the year was in anticipation of requirements for some time to come. Shipbuilding orders are still scarce, and this important user of bulk steel continues very nearly off the market. The few orders about for ship plates are the subject of keen competition, £8 ($38.80) delivered being accepted in the North of England. For steel sections Scotland quotes £7 ($33.95) delivered, the lowest price yet named. The quotation of £7 15s ($37.58) for joists is purely nominal £7 10s ($36.37) being accepted.

Sterling—$4.85

The formation of syndicates in Germany and the urgent need for business prevailing there has already been reflected in the reissue of quotations to Birmingham users. A large

(*Concluded on Page* 940)

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, October 5	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Despatch—By Cable								
PIG IRON	£ s d		Francs		Francs		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$16.09	3 6 6*	$14.58	315	$14.97	335	$18.63	3 17 0
Basic	16.46	3 8 0	14.35	310	14.30	320	21.54	4 9 0
Basic-bessemer	19.36	4 0 0†	14.12	305	13.86	310	20.09	4 3 0
Hematite, Phosphorus 0.02-0.05	18.03	3 14 6	20.37	440	.....	...	21.78	4 10 0
SEMIFINISHED STEEL								
Billets	$18.15	3 15 0	$22.22	480	$21.46	480	$22.02	4 11 0
Wire rods	44.77	9 5 0	27.32	590	28.16	630	27.83	5 15 0
FINISHED STEEL								
Standard rails	$38.72	8 0 0	$24.31	525	$23.24	520	$31.46	6 10 0
Merchant bars	1.62c	7 10 0	1.13c	540	1.14c	560	1.18c	5 8 0
Structural shapes	1.46c	6 15 0	1.10c	525	1.12c	550	1.18c	5 8 0
Plates, ship, bridge and tank	1.57c	7 5 0	1.34c	642	1.37c	675	1.38c	6 6 0
Sheets, black, 24 gage	2.21c	10 5 0	2.51c	1,200	2.28c	1,125	2.79c	12 15 0
Sheets, galvanized, 24 gage, corrugated	3.51c	16 5 0	3.88c	1,855	4.57c	2,250	3.94c	18 0 0
Bands and strips	2.21c	10 5 0	1.67c	800	1.52c	750	1.37c	6 5 0
Plain wire, base	2.38c	11 0 0	1.90c	910	1.62c	800	1.59c	7 5 0
Galvanized wire, base	3.02c	14 0 0	2.40c	1,150	2.13c	1,050	2.03c	9 5 0
Wire nails, base	3.13c	14 10 0	2.09c	1,000	1.73c	850	2.19c	10 0 0
Tin plate, base box 108 pounds	$4.72	0 19 6	.....	...	.....	...	$ 6.53	1 7 0
Domestic Prices at Works or Furnace—Last Reported								Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.58	3 8 6	$15.97	345(2)	$14.52	325	$20.01	87
Basic pig iron	16.46	3 8 0	15.97	345(1)	14.08	315	20.93	91
Furnace coke	3.03	0 12 6	6.57	142	5.59	125	5.52	24
Billets	27.83	5 15 0	20.37	440	21.90	490	27.60	120
Standard rails	1.73c	8 0 0	1.11c	530	1.07c	525	1.48c	142
Merchant bars	1.67c	7 15 0	1.20c	575	1.19c	585	1.35c	129
Shapes	1.57c	7 5 0	1.05c	500	1.13c	555	1.36c	130
Plates, ship, bridge and tank	1.67c	7 15 0	1.86c	890	1.38c	680	1.51c	145
Sheets, black, 24 gage	2.32c	10 15 0	2.53c	1,210	2.28c	1,125	2.45c	235
Sheets, galvanized 24 gage, corrugated	3.51c	16 5 0	3.87c	1,850	4.67c	2,300	3.86c	370
Plain wire	2.38c	11 0 0	1.90c	910	1.62c	800	1.98c	190
Bands and Strips	2.21c	10 5 0	1.46c	700	1.42c	700	1.59c	152

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 6d ($3.03) f. o. b. Ferromanganese £15 5s 0d ($73.81) f. o. b. German ferromanganese £15 0s 0d ($72.60) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Machinery

Buying Generally Is in Better Volume—Export Business Looms—Automobile Industry Purchases Heavily—Crane Sales Lag

ALL machine tool centers appear to be enjoying good business in the sales of equipment. The eastern market at present is stimulated by unusually heavy buying for export trade. Recent known sales for this purpose total $265,000. A little better buying by the railroads has been noted during the last few days. With a number of automobile builders preparing to increase production schedules, these interests have been heavy buyers of new tools. This is true particularly in the Detroit area, where the equipment is purchased for expansion purposes. Other industries are buying more cautiously and for replacement rather than expansion. Used tools continue in fair demand, although purchases involve single tools.

New York, Oct. 6.—Breaking the stagnation of past weeks and raising hopes of machine tool builders, heavy export purchases by Amtorg Trading Corp., feature the local market. Reliable reports allocate $90,000 in milling machines to one Cincinnati builder and orders for drill presses and heavy duty engine lathes to two others. Two more have landed contracts for a $75,000 aggregate of standard tools. Fully $100,000 in grinding equipment has been or soon will be placed, as well as other business. All this equipment is for Russia. Niles-Bement-Pond Co. figures heavily in domestic business with railroad contracts for the following: Kentucky & Indiana Terminal railroad, 90-inch driving wheel lathe, 48-inch car wheel borer, 1100-pound steam hammer, 96-inch, 600-ton wheel press, 5-foot radial drill and combination journal turning and axle lathe; Central railroad of New Jersey for Ashley, Pa., shops, combination journal turning and axle lathe, 48-inch car wheel borer, and 6-foot radial drill; Nickel Plate, 90-inch locomotive axle lathe. Overhead crane demand shows but slight increase, while interest in locomotive cranes continues to be depressing.

Boston, Oct. 6.—Stimulation in New England machine tool demand is credited to recent exhibitions and to threatened price advances. One large manufacturer of multiple drills announces a 10 per cent advance effective at once. Sales for the week include: a grinder to a Fitchburg, Mass., builder; slotting machine and other equipment to a Rhode Island printing machine maker; automatic screw machine placed in Springfield, Mass.; and a miller sold to General Electric Co., Lynn, Mass. Walworth Mfg. Co., Boston, is in the market for several tools, including a multiple spindle drill.

Pittsburgh, Oct. 6.—Disappointment in the size of the list put out by Westinghouse Electric & Mfg. Co., as its fourth quarter requirements, is general. One seller reports the list he received is the smallest issued by the interest in four or five years. Apparently one general list is not being issued, exclusive dealers receiving only the inquiries for the machines they can furnish.

A few sellers have inquiries covering more varied requirements. One such calls for a special keyseater, a small special drilling machine, a radial drill, horizontal boring mill, turret lathe, grinder, multiple drill, lathe and two sensitive drills. A small Pennsylvania trade school list calls for about about $500 worth of tools, together with a large quantity of small supplies.

One large house reports disposal this week of several items, from its floor, including a motor-driven toolroom lathe, drill press, small and large pipe machines, hack saw, etc. A large motor-driven grinder was sold by this dealer last Friday. Carnegie Steel Co. still is negotiating for two buckets for Carrie and Duquesne. It is not proceeding to buy against its large crane requirements, awaiting further appropriations.

CRANE ORDERS PENDING

Seven electric overhead cranes for power project in New York metropolitan district; reported awarded Whiting Corp.

Four electric overhead cranes for Florence Pipe Foundry & Machine Co., Florence, N. J., reported last week as awarded to Harnischfeger Corp. Three of 5 tons and one 10 tons capacity.

Three 3-ton, 3-motor cranes, floor controlled, for the Philadelphia Textile Machine Co., Philadelphia; awarded unnamed builder.

Two 25-ton electric overhead cranes for Decatur, Ind., shops of Wabash railroad, placed through Dwight P. Robinson, Inc., New York; to unnamed builder.

Two 10-ton electric cranes and two 2½-ton single I-beam cranes, for Coney Island shops of Brooklyn-Manhattan Transit Co., placed through Dwight P. Robinson & Co. Inc., New York, to Maris Bros. and Franklin Moore Co., respectively.

Among the single awards were: 75-ton 4-motor crane with 15-ton auxiliary for Comal Power Co., New Breunels, Texas, placed through United Gas Improvement Corp., to Northern Engineering works; 1-motor overhead crane for Holyoke Water Power Co., Holyoke, Mass., to Whiting Corp.; 15-ton electric crane for Battey & Kipp, Chicago, engineers, to Niles-Bement-Pond Co., it being understood this crane is for Florida East Coast railroad; 15-ton handpower crane, for Holston Quarry Co., Strawberry Plain, Tenn., to New Jersey Foundry & Machine Co.; 50-ton transfer table for Brooklyn-Manhattan Transit Co., placed through Dwight P. Robinson & Co., Inc., New York, with Alfred Box & Co.

CRANE ORDERS PLACED

22 jib cranes, ranging from ½ to 3 tons capacity, for Jackson, Tenn., shops of Mobile & Ohio railroad, to be placed shortly through Dwight P. Robinson & Co., Inc., New York.

Six cranes for No. 1 seamless tube, for Youngstown plant of Youngstown Sheet & Tube Co., including two 10-ton, two 30-ton one 20-ton and one 40-ton; bids being taken.

Two 3-ton electric overhead cranes for building No. 8 of the West Philadelphia plant of General Electric Co.; bids asked.

Cranes for South Chicago plant of Valley Mold & Iron Corp., Sharpsville, Pa.; it is understood few cranes are to be bought, some to be shipped from present plant.

Cranes for Weirton Steel Co., Weirton, W. Va.; formal inquiry expected soon.

10-ton electric crane, 32-foot span, for General Electric Co., Schenectady, N. Y., plant; bids asked.

Cincinnati, Oct. 6.—Fair bookings of machine tools for the past week in most cases involved single units, and where sizable orders appeared a number of individual tools were specified. Kentucky & Indiana Terminal Railroad Co., Louisville, Ky., stands as the largest purchaser, ordering a number of tools from a Cincinnati interest. Baldwin Locomotive Works gave the same builder a contract for a 5-ton crane. Chicago, Milwaukee & St. Paul railroad is reportel having ordered a gap lathe in Cincinnati. The majority of tool makers are optimistic over prospects for the next month. Business is also improving with used machinery dealers although most present orders are for single installations.

Chicago, Oct. 6.—Spottiness of the machine tool trade evident the latter part of September seems to have extended into October. Few houses claim a good run of business, the majority faring but moderately well. It seems the users themselves are enjoying good business but are cautious as to replacements and additions. To some extent the 1926 railroad program being up will be a carryover of unclosed 1925 inquiry.

One leading western carrier has placed a wheel press, turret lathe, car wheel borer and guide bar grinder with a Chicago machinery equipment interest.

Cleveland, Oct. 6.—No apparent slowing up of machine buying has been noticed in this section. September closed as one of the best months of the year and October is off to a good start. The automobile industry in Detroit again is buying in good volume as the production schedules on several makes of cars are being increased. Much of the equipment is for plant expansions. With the prices of milling machines, shapers, grinders and special machines already advanced, increases in other lines are expected to follow. Used equipment is not as active as recently but the lull is believed to be only a temporary slump.

RegistrationHeavy

At Convention of American Foundrymen's Association at Syracuse

Registration for the opening day of the twenty-ninth annual meeting of the American Foundrymen's association at Syracuse, N. Y., totaled 1200, an unusually large figure for this stage of the convention. The floor space occupied by the exhibits aggregates 57,000 square feet, which makes the show the largest since 1920. In fact, only two exhibitions, that at Philadelphia in 1919 and that at Columbus in 1920, were greater in point of space occupied.

Two initial sessions of the convention held on Tuesday afternoon were taken up with the reading and discussion of a number of papers dealing with various features of the processes involved in melting gray iron and nonferrous metals. Sessions were held simultaneously in adjoining rooms in one of the group of buildings occupying space in the New York state fair grounds.

Interesting features in connection with the electric furnace were presented at both sessions. At the gray iron session papers were read by G. E. Lamb, the Lamb Machine Co., Hoquiam, Wash., on "Electric Melting of Gray Iron" and by S. S. Schaller, Seattle, Wash., on "Synthetic Cast Iron." According to Mr. Lamb the electric furnace is an economical medium on the West Coast where electric current is cheap and where pig iron and coke on account of the long hauls and high freight rates are much higher than similar commodities in other more favored sections of the country. The electric furnace is particularly advantageous in foundries where both gray iron and steel castings are made and where it may be switched alternately from one metal to the other.

While Mr. Lamb's paper was confined to a description of a process in which scrap car wheels formed the charge, Mr. Schaller's paper dealt with many features in the process of converting scrap steel into a commercial grade of cast iron.

At the nonferrous session G. F. Hughes, Bridgeport Brass Co., Bridgeport, Conn., presented a paper on "Some Refractory Problems in the Nonferrous Electric Furnace Casting Shop." D. Wilcox, Ajax Electrothermic Corp., Trenton, N. J., read a paper on "New High Frequency Induction Furnaces."

The Baldwin Chain & Mfg. Co., which announced a year ago that it would move its business from Worcester, Mass., has bought of the J. W. Bishop Co., a tract of about 158,000 square feet of land in Auburn, Mass.

Committee Is Named To Study Steel Capacity

New York, Oct. 6.—Directors of the American Iron and Steel institute have appointed a committee to investigate the capacity of the steelworks of the country with a view to revising present figures if found necessary. John A. Topping, chairman of the Republic Iron & Steel Co. is chairman of the committee. The other two members are James A. Farrell, president of the United States Steel Corp. and E. G. Grace, president of the Bethlehem Steel Co.

The committee will begin its work immediately. The appointment of the committee is the result of numerous expressions to the effect that the institute's present figures show the capacity to be much larger than it actually is. In an article published in IRON TRADE REVIEW, Aug. 6, John A. Topping gave it as his opinion that although the institute figures show the country to have a capacity of 59,585,755 tons of steel, it is questionable whether the actual capacity for production at present is over 51,000,000 tons.

Iron and Steel Institute Announces Meeting

The twenty-eighth general meeting of the American Iron and Steel institute will be held at the Commodore hotel, New York, Friday, Oct. 23, it has just been announced. The forenoon session will begin at 10 a.m., the afternoon session at 2 p.m., and the evening meeting at 7 o'clock. President Elbert H. Gary, chairman of the United States Steel Corp., New York, will deliver the opening address, which will be followed by a number of special papers. The papers program is as follows:

"Low Temperature Distillation of Coal," by M. W. Ditto, Socony Burner Corp., New York.
"Silicon Steel," by Dr. W. E. Ruder, General Electric Co., Schenectady, N. Y.
"Stainless Steel," by D. G. Clark, Firth Sterling Steel Co., Pittsburgh.
"Higher Temperatures and Better Economy in Use of Liquid Fuels," by Max Sklovsky, Deere & Co., New York.
"Alloy Steels Up To Date," by F. E. Clark, Republic Carbon Co., Niagara Falls, N. Y.
"Manufacture and Use of Wrought Iron," by A. G. Smith, engineer of tests, New York
"Ely Process of Manufacturing Wrought Iron," by F. H. Dechant, William H. Dechant & Sons, Reading, Pa.
"Roe Process of Manufacturing Wrought Iron," by James P. Roe, Reading Iron Co., Reading, Pa.
"Aston Process of Manufacturing Wrought Iron," by James Aston, A. M. Byers Co. Pittsburgh.

Dalton To Study Marine Problems for Coolidge

Washington, Oct. 6.—H. G. Dalton, member of Pickands, Mather & Co., Cleveland, and a member of the iron and steel committee of the war industries board during the war, has been selected by President Coolidge to act for him in a study of the merchant marine situation and the insurrection that has arisen in the shipping board over the authority granted Admiral Leigh C. Palmer, head of the Emergency Fleet Corp., in the handling of ship sales negotiations.

The move of the majority members of the shipping board to take from Admiral Palmer the powers he has held and to regain for the board the complete control of the Fleet corporation is not to interfere with the study President Coolidge desired Mr. Dalton to undertake.

Pig Iron Market Strong

(*Concluded from Page* 912)

ments of northern pig iron were the heaviest since August, 1920, and the beginning of October is on as high a basis. Unless the unforeseen occurs, 1925 shipments will set a new record for the Chicago district. Selling continues heavy with many tonnages destined to carry over from the fourth into the first quarter. Melters are more anxious to buy first quarter iron than producers are to sell. An increasing amount of business is being taken for the first quarter at $21.50, Chicago furnace, for No. 2 foundry and malleable. Several inquiries for 5000 tons each are pending. The St. Paul railroad inquiry involves 3400 tons for last quarter. The silvery schedule in general is up 50 cents for last quarter, with first quarter prices $1 over last quarter. Tennessee and Alabama iron are quoted at $19 to $19.50, Birmingham.

St. Louis, Oct. 5.—Inquiry for pig iron is active and represents demands considerably in excess of what sellers can fill. A Kansas City melter wanting several cars of over 2.78 per cent silicon has had to apply to outside sources to procure it. Actual sales reported aggregate under 750 tons. The principal inquiry was for 1200 tons of 2.75 per cent silicon and over. Prices are firm. No. 2 Southern is $19 to $19.50, while northern iron of the same grade is $21.50. The St. Louis Coke & Iron Co.'s quotation is nominal at $22.50 to $23, f.o.b. Granite City.

Birmingham, Ala., Oct. 5.—An upward trend in pig iron quotations is noted in southern territory as demand improves. Sales of small lots are being made in Birmingham at $20 base, while $19 is the lowest price reported in some instances. Surplus stacks continue to run down. Eleven furnaces are producing foundry iron in this district and 10 are on basic.

Eight Blast Furnaces Blown In

September Production of Pig Iron Shows Gain of 4 Per Cent—Output Increased from 87,328 Tons to 90,862 Tons Per Day—200 Stacks Active on Last Day of Month

PRODUCTION of coke pig iron in September showed further gain making the second consecutive month to register improvement following a four-month decline during midsummer. Operating blast furnaces were increased during the month and several more have been blown in since the first of October, indicating a continued expansion is under way.

MONTHLY PRODUCTION

	1925	1924	1923
January	3,372,207	3,015,480	3,228,224
February	3,214,067	3,073,619	2,993,918
March	3,571,422	3,465,389	3,523,595
April	3,211,235	3,226,107	3,546,308
May	2,933,907	2,619,986	3,868,486
June	2,679,045	2,022,836	3,667,868
Total 1st half	18,981,883	17,423,417	20,828,401
July	2,665,262	1,783,457	3,684,677
August	2,707,171	1,882,986	3,448,886
September	2,725,885	2,053,617	3,117,526
October	.....	2,461,727	3,142,642
November	.....	2,514,979	2,891,191
December	.....	2,956,389	2,912,527
Total 2nd half	.....	13,653,155	19,197,449
Grand total	27,080,201	31,076,572	40,025,850

Furnaces in blast on Sept. 30 totaled 200, this being a gain of eight over the 192 producing iron on Aug. 31.

As forecast by a preliminary estimate published in last week's issue of IRON TRADE REVIEW, pig iron made in September totaled 2,725,885 gross tons. Compared with the 2,707,171 tons made in August, this represented a gain of 18,714 tons, or 0.69 per cent. September, however, was a month of 30 days against 31 days in August. On an average daily basis, the production of the month represented 90,862 tons, an increase of 3534 tons, or 4.05 per cent, over the 87,328-ton rate of the previous month. In September, pig iron was made at the rate of 33,200,000 tons per year, compared with the indicated annual rate of 31,800,000 tons in August.

Active Blast Furnaces

	In blast	Total	Per Cent
September	200	387	51.6
August	192	391	49.2
July	188	396	47.5
June	191	399	47.9
May	196	405	48.5

In September, merchant pig iron aggregated 581,595 tons, a loss of 6735 tons from the 588,330 tons of August. Reduced to the daily basis, however, merchant production during the month showed an increase of 408 tons over the 18,978-ton daily rate of the preceding month. Nonmerchant or steelworks pig iron amounted to 2,144,290 tons in September, a gain of 25,449 tons over the 2,118,841 tons of August. On an average daily basis, the September output represented 71,476 tons per day and an increase of 3126 tons over the 68,350-ton daily rate of August.

Blast furnaces active on Sept. 30 totaled 200, or eight more than were blowing Aug. 31. During September 4 merchant furnaces were blown in and 1 blown out or banked, the net gain being 3. Of the nonmerchant class, 6 were blown in and 1 blown, the net gain for this class being 5. Of the 200 blast furnaces active on the last day of the month, 48 were merchant and 152 were nonmerchant.

Four more blast furnaces have been removed from the country's serviceable list, bringing the total from 391 to 387. The furnaces just discarded are Clifton No. 2 furnace of Sloss-Sheffield Steel & Iron Co. at Ironton, Ala.; Spring Valley, Wis., stack of the Spring Valley Iron & Ore Co.; Hannah furnace of the Republic Iron & Steel Co. at Youngstown, O.; and Ella furnace of Edmund W. Mudge & Co., West Middlesex, Pa.

Stacks blown in during the month were: In Ohio: Belfont, Belfont Steel & Wire Co.; one Ohio, Carnegie Steel Co. In Pennsylvania; two Edgar Thomson, Carnegie Steel Co.; one Aliquippa, Jones & Laughlin Steel Corp.; Claire, Edmund W. Mudge & Co.; Steelton A, Bethlehem Steel Co. In New York; Susquehanna No. 1, Rogers, Brown Iron Co. In Tennessee; Rockdale, J. J. Gray Jr. In Indiana: one Indiana Harbor, Youngstown Sheet & Tube Co.

Stacks blown out were: In Alabama: Pioneer No. 1, Republic Iron & Steel Co.; Ensley No. 2, Tennessee Coal, Iron & Railroad Co.

AVERAGE DAILY PRODUCTION

	1925	1924	1923	1922	1921
Jan.	108,781	97,273	104,136	53,090	77,895
Feb.	114,788	105,987	106,925	58,220	69,906
Mar.	115,207	111,787	113,664	65,674	51,447
Apr.	107,041	107,537	118,210	69,005	39,691
May	94,642	84,515	124,790	74,495	39,202
June	89,301	67,427	122,262	78,748	35,466
July	85,976	57,531	118,860	77,517	27,892
Aug.	87,328	60,741	111,254	58,408	30,802
Sept.	90,862	68,454	103,917	67,466	32,859
Oct.	.....	79,410	101,375	84,827	39,821
Nov.	.....	83,832	96,373	94,870	47,165
Dec.	.....	95,367	93,952	99,468	52,992
Ave.	99,195	84,908	108,659	73,563	45,223

DIVISIONS OF PRODUCTION

1924	Merchant	Non-merchant	Spiegel	Ferro-man-ganese	Other ferro
Jan.	707,710	2,307,770	7,948	19,735	.....
Feb.	679,700	2,393,919	9,870	22,262	.....
Mar.	712,321	2,753,068	13,794	22,350	.....
Apr.	708,151	2,517,956	4,240	23,580	163
May	648,656	1,971,330	9,336	21,663	763
June	551,408	1,471,428	9,410	20,563	779
July	468,780	1,314,677	15,328	11,927	765
Aug.	465,059	1,417,927	8,010	7,654	760
Sept.	518,017	1,535,600	5,033	7,255	593
Oct.	607,717	1,854,010	10,047	7,780	822
Nov.	605,438	1,909,541	8,835	13,429	870
Dec.	634,726	2,321,663	5 284	21,220	904
Total	7,307,683	23,768,889	107,135	199,418	6,419
1925					
Jan.	659,256	2,712,951	5,418	23,564	956
Feb.	661,415	2,552,652	4,910	19,796	848
March	736,284	2,835,138	5,449	24,422	877
April	689,162	2,522,073	5,341	21,448	799
May	605,347	2,328,560	5,294	22,717	298
June	563,782	2,115,263	4,972	19,834	.....
July	609,741	2,055,521	5,074	16,614	.....
Aug.	588,330	2,118,841	4,940	18,818	.....
Sept.	581,595	2,144,290	5,162	18,381	140

SEPTEMBER PIG IRON

	No. of Stacks	No. in blast last day of month Sept.	Aug.	Total tonnage made Merchant	Nonmerchant	—Totals— Sept.	Aug.
Pennsylvania	136	69	64	100,915	781,894	882,809	830,882
Ohio	73	45	43	132,561	558,719	691,280	723,186
Alabama	38	22	24	103,520	112,042	215,562	228,494
Virginia	17	2	2	9,832	.....	9,832	11,215
New York	26	12	11	74,309	74,487	148,796	146,227
New Jersey	4	0	0	.....	.....	.....	.....
Illinois	25	14	14	83,923	163,502	247,425	253,611
Colorado	4	1	1				
Indiana	17	14	13	24,659	329,083	353,742	342,751
Maryland	6	5	5				
Wisconsin	5	2	2				
Kentucky	7	1	1				
Tennessee	14	2	1	12,029	69,997	82,026	71,723
Utah	1	1	1				
West Virginia	5	4	4				
Michigan	4	4	4				
Minnesota	3	2	2	30,269	40,461	70,730	75,324
Missouri	1	0	0				
Texas	1	0	0				
Spiegel and ferro—all states	....	....	....	9,578	14,105	23,683	23,758
Total	387	200	192	581,595	2,144,290	2,725,885	2,707,171

Foundry Show Largest Since '20

Annual Exhibition of American Foundrymen's Association Opens at Syracuse with 180 Manufacturers Represented—Machine Tools in Evidence—Space Occupied Totals 57,000 Square Feet—Pours Electric Castings

WITH 57,000 square feet of floor space occupied by the exhibits of 180 manufacturers of foundry and metal working equipment and with an unusually good attendance indicated by early registration figures, the annual exhibition of the American Foundrymen's association opened auspiciously Monday at the New York state fair grounds at Syracuse, N. Y.

In many respects the show reminds visitors of the 1920 exhibit at Columbus, where the Ohio state fair grounds presented a setting closely resembling that at Syracuse. The booths comfortably fill the spacious manufacturers and grange buildings. In actual extent of space occupied, the show is the largest held by the association since 1920.

While the variety of equipment shown does not differ materially from that of previous years, one gains the impression that more emphasis is placed on the problem of handling material. This is suggested not only by the trend in the development of molding equipment, which combines handling devices with the molding apparatus, but by several innovations in melting, cleaning and machining equipment. The newest development in sand blast apparatus involves an improved method of loading and unloading rather than any radical change in the blast proper. In sand handling and mixing equipment, efforts to simplify the hand labor involved are evident.

Considering the fact that machine tool builders have participated in two large shows already this year, the representation at Syracuse is surprisingly good. Grinding equipment is especially prominent. Electric melting units are more noticeable this year than has been the case in recent shows. One builder is actually pouring metal from an electric furnace. Several new ideas in molding machines are recognized by those posted on the progress being made in the development of this type of equipment.

Importance of Material Handling Emphasized

THAT machine tool builders and dealers find visitors to the annual foundry shows are potential buyers of their products is evidenced by the fairly representative display of machine shop equipment in machinery hall. Machines of upward of 20 manufacturers are being demonstrated.

The largest exhibit of tools is that of the Syracuse Supply Co., which includes a wide assortment of machines and accessories. Products of the American Tool Works Co., Cincinnati predominate, the list embracing a 24-inch motor driven shaper, a 12-speed geared-head lathe, a 24-inch engine lathe, and a 5-foot triple-purpose radial drill. Two multiple spindle drills made by the Edlund Machinery Co., Cortland, N. Y., are shown, one of which is equipped with a hand feed lever which can be engaged or disengaged so that the lever always is in the most convenient position. Other machines in this booth include turret lathes built by the Foster Machine Co., Elkhart, Ind.; a geared-head engine lathe manufactured by the Monarch Machine Tool Co., Sidney, O.; a motor driven milling machine built by the Kearney & Trecker Corp., Milwaukee; drilling machines made by the Minster Machine Co., Minster, O.; turret lathes built by the International Machine Tool Co., Indianapolis; and a grinder manufactured by the Van Dorn Electric Tool Co., Cleveland. Core wire straighteners developed by Kane & Roach, Syracuse, N. Y., also are displayed.

One of the most interesting working exhibits is that of the Keller Mechanical Engineering Corp., Brooklyn, N. Y. An automatic die sinking machine is being demonstrated on metal patterns cut with the aid of templates. A universal radius and cutter grinder and numerous flexible shaft machines are demonstrated.

Spring collets rough finished on an automatic are threaded, finish turned and ground internally on a back geared precision lathe and an internal grinder at the booth of the Rivett Lathe & Grinder Co., Boston. The Warner & Swasey Co., Cleveland, is finishing elevator cams on its universal hollow hexagon turret lathe and also is domonstrating its high speed pneumatic grinders which have been seen at one or two previous exhibitions. The Porter-Cable Machine Co., Syracuse, and the Oliver Machinery Co., Grand Rapids, Mich. are demonstrating wood working machines. The Porter-Cable company also is demonstrating production and tool room lathes and a milling attachment.

A wide variety of metal cutting equipment is embraced in the exhibits of the Armstrong-Blum Mfg. Co., Chicago; E. C. Atkins & Co., Indianapolis; and Henry Disston & Sons, Inc., Philadelphia. All three are demonstrating hack saw and hand saw machines, while the latter two display circular saws, hack saw blades and many other kinds of metal saws.

As in the case of all recent shows, grinding equipment is much in evidence. This is true particularly of abrasive machines for foundry use. The number of swing type grinders is noticeable. The Transmission Ball Bearing Co., Buffalo, is exhibiting a swing frame grinder for the first time. The frame is a sturdy casting which supports a motor at one end and the wheel at the other. The driveshaft, connected to the motor by a flexible coupling, revolves in two ball bearings spaced about four feet apart. The machine is being demonstrated on an 800-pound billet. Ball bearings for power transmission also are shown.

The Safety Emery Wheel Co., Springfield, Mass.. is demonstrating a swing frame grinder supported with a new portable mount which can be shifted from place to place in the foundry by crane. The wheel is mounted so that it is accessible for work on the side as well as on its circumference. Floor type and portable grinders also are displayed. The Bridgeport Safety Emery Wheel Co., Bridgeport, Conn., also is demonstrating a motor driven swing frame grinder, floor grinders, a steel casting chuck and sectional grinding wheels.

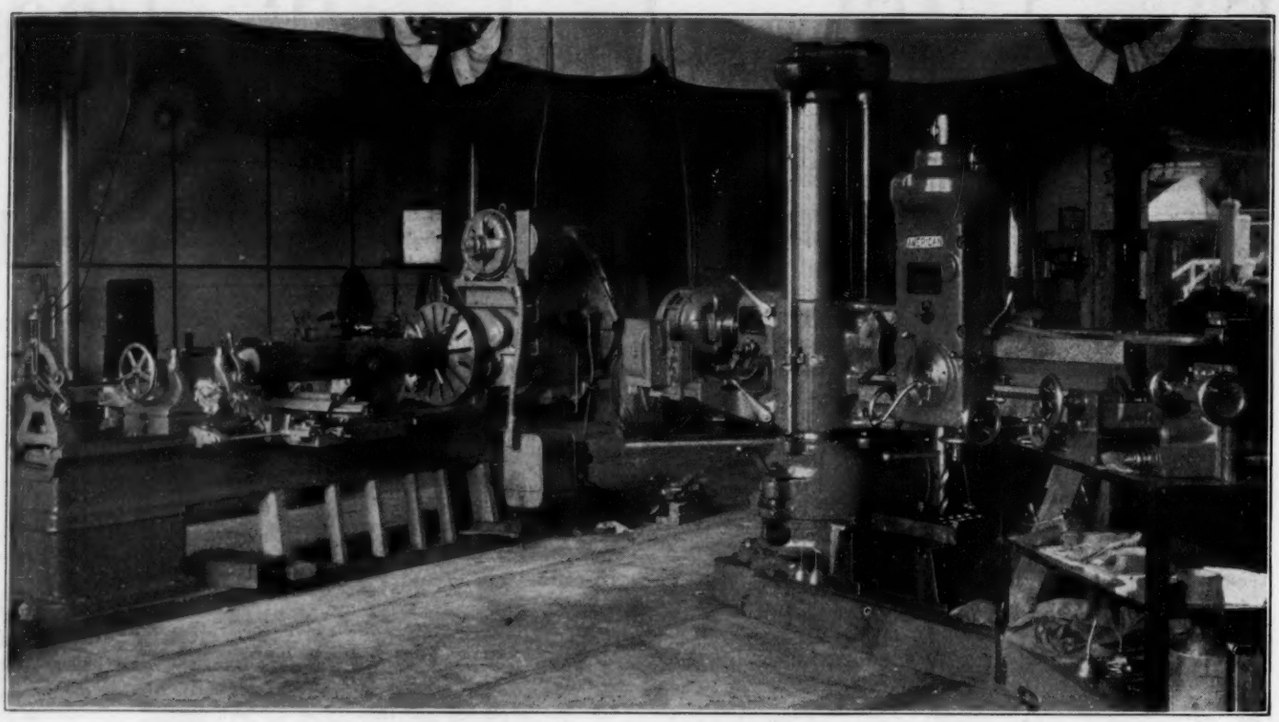


FIG. 1—A CORNER OF THE MANUFACTURERS' BUILDING, SHOWING PART OF ONE OF THE MACHINE TOOL EXHIBITS

A 53-inch wet vertical spindle disk grinder and a disk grinder with power oscillating table are being shown by Charles H. Besly & Co., Chicago.

Flexible shaft grinding equipment is being exhibited by the R. G. Haskins Co., Chicago. All kinds of grinding wheels for foundry work are featured by the Carborundum Co., Niagara Falls, N. Y., which also is showing its line of refractories. Norton Co., Worcester, Mass., displays the types of wheels recommended for nonferrous, steel, gray iron and malleable castings and is demonstrating a number of 20-inch floor grinders. Its line of refractories for metallurgical use is displayed.

The number of air compressors in evidence in machinery hall emphasizes the important role played by compressed air in the modern foundry. The Laidlaw works of the Worthington Pump & Machinery Co., Cincin-

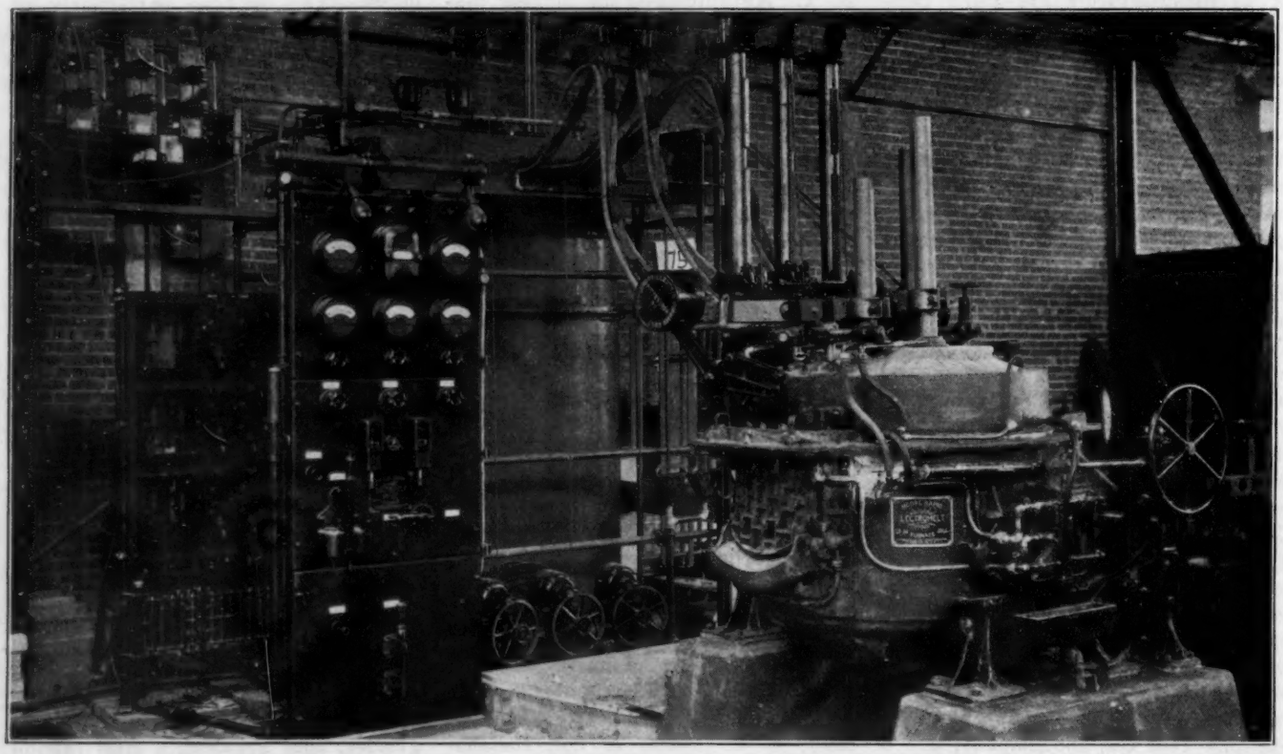


FIG. 2—THIS ELECTRIC FURNACE IS UNDER POWER AND IS BEING USED DAILY IN PROVIDING METAL FOR MOLDS IN A MINIATURE FOUNDRY

nati, is operating a 350-cubic foot compressor belted to a slip ring motor and equipped with a silencer of the Maxim type. The National Brake & Electric Co., the Milwaukee unit of the Westinghouse Traction Brake Co., is exhibiting a motor driven compressor with automatic control, and also numerous accessories. In addition to a motor generator for furnishing direct current to exhibitors, the General Electric Co., Schenectady, N. Y., is operating a centrifugal compressor driven by a 50-horsepower induction motor. A turbo compressor is the chief attraction in the booth of the Spencer Turbine Co., Hartford. Conn.

A compressor operated by the Chicago Pnuematic Tool Co., New York, is direct connected to a motor in the flywheel. Pneumatic tools and hoists also are shown. The Sullivan Machine Co., Chicago, is demonstrating a compound compressor, direct connected, and also compressed air tools and a hoist. A wide range of pneumatic hammers, grinders, etc., is shown by the Independent Pneumatic Tool Co., Chicago; Cleveland Pneumatic Tool Co., Cleveland and George Oldham & Son Co., Baltimore. In addition to an extensive display of compressed air hoists, rammers, grinders, etc., the Ingersoll-Rand Co., New York, is exhibiting a compound air compressor driven by a 50-horsepower motor.

Material Handling Stressed

When competition is keen, attention always is directly more strongly to reducing production costs. That handling forms a considerable item, and one which may be lightened by the use of mechanical aids is demonstrated by the interest shown in cranes, hoists, overhead trackways, conveyors, trucks and similar equipment. American Engineering Co., Philadelphia, demonstrates motor driven hoists, handling buckets of sand, and rolling and closing large flasks. Hayward Co., New York, builders of special buckets are operating clam shell and orange peel buckets, both cable and motor operated, Louden Machinery Co., Fairfield, Ia. in a limited space shows a complete line of overhead equipment, including cranes, air hoists, track and trolley systems and other handling accessories.

Application of special cupola charging units is shown by an actual working installation, erected in the manufacturers building by Shepard Electric Crane & Hoist Co. Montour Falls, N. Y. A number of interesting dump bottom buckets are displayed, including those which are divided vertically into two equal sections and others which have a segmental bottom which when open assumes a cone shape and distributes the charge uniformly over the bed of the cupola. G. H. Williams Co., Erie, Pa. has developed a large clam shell bucket with a sheave yoke attachment, designed for handling bulk material.

Mathews Conveyor Co., Ellwood City, Pa. has a new type of ball bearing roller conveyor particularly adapted to use in continuous production shops. Yale & Towne Mfg. Co., Stamford, Conn. has in service a storage battery type elevating platform truck, which was demonstrated with a dump body carriage, resting upon a frame supported above the floor on a platform. This company also operated a 1000-pound electric chain hoist together with a 2-ton slow speed chain hoist.

A number of different types of electric tractors, trucks, furnace chargers and portable cranes are being demonstrated by the Elwell-Parker Electric Co., Cleveland.

Pours Electric Castings

Various types of electric melting equipment form an interesting feature of the show. Much attention is being given to the display of the Pittsburgh Electric Furnace Corp., Pittsburgh, where molding and pouring operations are being carried out. This company has a ½-ton Moore-type electric melting furnace equipped with a transformer, automatic regulator, a demand limitator and necessary control panel, in operation melting four or five heats of gray iron each day. A small foundry floor is located on one side of the furnace, and molds made under the supervision of the Straight Line Engine Co., Syracuse, N. Y., are poured with metal from the electric furnace.

William Swindell & Bros., Pittsburgh, are showing an electric furnace of 1000-pound capacity completely equipped with a transformer, mechanism for lifting the electrodes, and the switchboard. The furnace is connected with power to show the operation of the tilting mechanism, gears electrodes and the safety of the

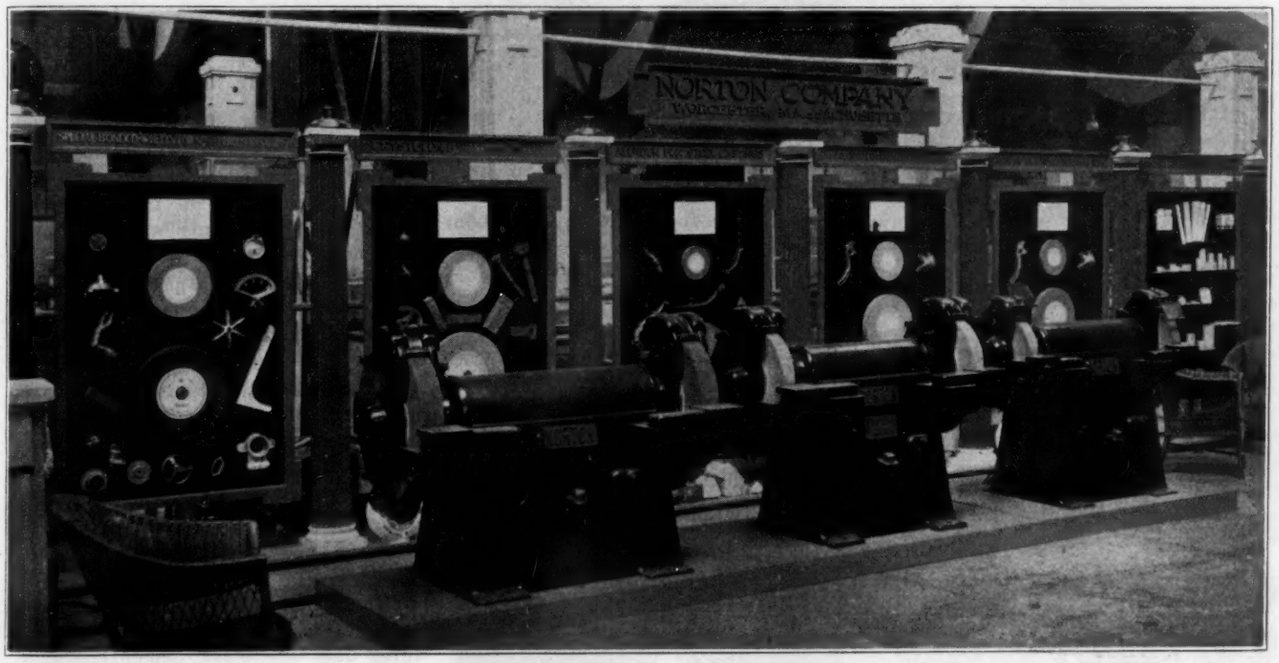


FIG. 3—GRINDING EQUIPMENT AND SUPPLIES ARE MUCH IN EVIDENCE AT THE SYRACUSE SHOW

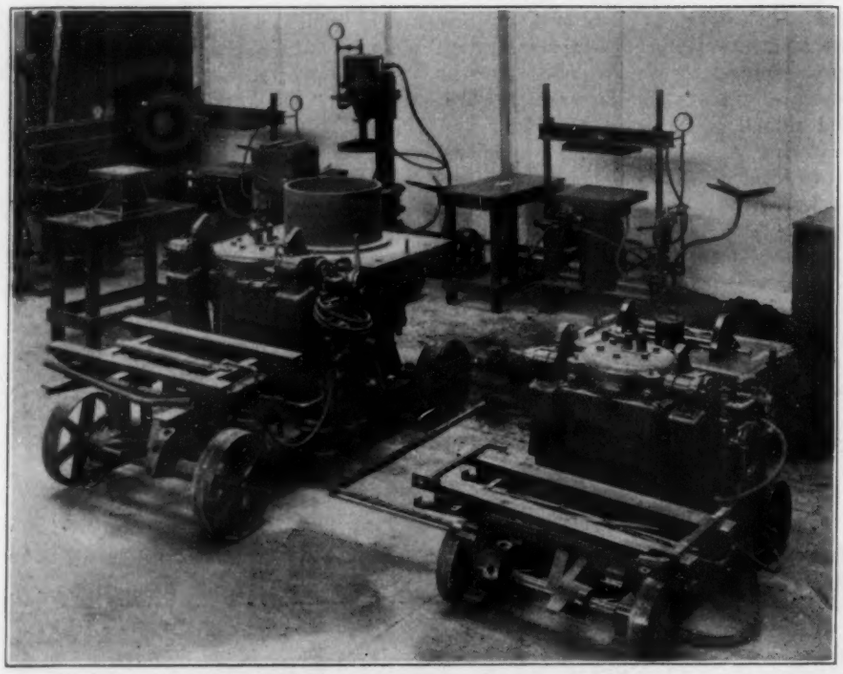


FIG. 4—ONE OF THE MANY EXHIBITS OF MOLDING MACHINES IN THE MANUFACTURERS' BUILDING

switchboard or the melters station.

A 350-pound electric furnace of the tilting type together with the necessary equipment is on display at the booth of the Detroit Electric Furnace Co., Detroit. This company also is showing various types of castings made from metal melted in this type of furnace. The Ajax Metal Co., Philadelphia, is showing an induction type electric melting furnace which is designed to melt 600 pounds of metal per hour. Electric heat treating and annealing furnaces, photographs of installations and specimens of work annealed in this type of furnace are featured by the Electric Furnace Co., Salem, O.

A variety of melting equipment as well as other material is found at the booth of the Monarch Engineering & Mfg. Co., Baltimore. The equipment for melting metals includes an oscillating melting furnace, an oil or gas fired stationary crucible furnace, a die casting furnace, a dross reclaiming furnace, an oil fired cupola, a coke fired tilting furnace and a bearing lining furnace. This company also is showing a combination core oven, sand sifter, ladle heater and a stationary bottom for an iron pot furnace. Photographs, drawings and other technical data on melting, annealing and heat treating furnaces for both ferrous and nonferrous metals are displayed by Holcroft & Co., Detroit. Various types of pyrometers and measuring instruments form the display of the Leeds & Northrup Co. Philadelphia.

Acetylene welding equipment is being exhibited by the Air Reduction Sales Co., New York and the Oxweld Acetylene Co., New York, while welding is being demonstrated by the General Electric Co., Schenectady, N. Y.

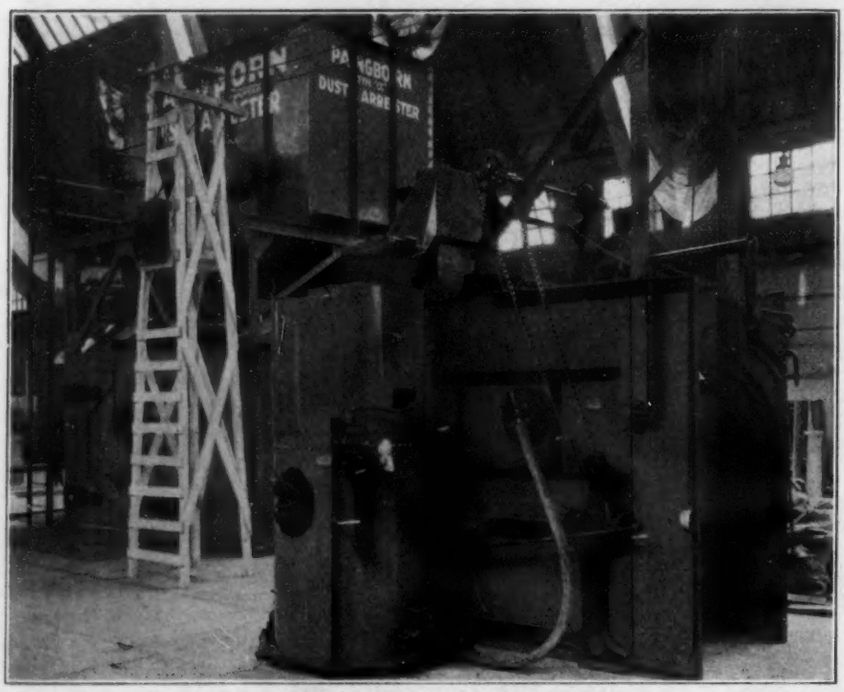


FIG. 5—BECAUSE OF THEIR SIZE AND BRIGHT COLORS THE SAND BLAST OUTFITS CATCH THE EYE AS SOON AS A VISITOR ENTERS THE BUILDING

Show Cleaning Room Equipment

Because of its size and the bright distinguishing colors in which it is painted, the sand blast and dust arresting apparatus in the manufacturers building looms as the most spectacular part of the show. The exhibit of the Pangborn Corp., Hagerstown, Md., centers about a new sand blast outfit, the principal feature of which is a device for quickly loading and unloading the barrel. The work is brought to the machine in skips, which are hoisted to position over the barrel, after which the contents are dumped and the drum set in motion. After the work is cleaned, the barrel is brought to rest with the opening down, so that the castings drop into a truck or suitable container underneath. The loading and unloading features only are being demonstrated at the show. A separator for steel or sand abrasives, a table room sand blast outfit and a cloth screen dust arrestor complete the exhibit.

The extensive working exhibit of the W. W .Sly Mfg. Co., Cleveland, embraces nearly a dozen units, including a number of square and round tumbling mills. The square mill with direct motor drive and combination clutch and drive, first shown at Milwaukee last year, is attracting considerable attention. A turntable cabinet with full size hopper, a sand blast room with unusual ventilating features, a cabinet with pneumatic elevation and separation of abrasive, a continuous tumbling mill with a conveyor for tumbling simple castings and a pneumatic sand separator and reclaimer are among the apparatus shown in operation.

A sand blast barrel entirely enclosed is shown in conjunction with its

line of molding machines, pouring devices, etc., by the Arcade Mfg. Co., Freeport, Ill. The display of the New Haven Sand Blast Co., New Haven, Conn., consists of a direct pressure sand blast barrel. A square sand blast cabinet, a machine of the elevating hood type, a generator, sand blast curtains and numerous guns are shown by the Ruemelin Mfg. Co., Minneapolis. The Macleod Co., Cincinnati, is showing a working model of a dust arrestor and exhibiting a portable sand blast hose machine and oil burners.

While a considerable volume of the molding equipment shown does not differ from that shown at the exhibition in Milwaukee last year, still a number of changes are noted. Adams Co., Dubuque, Iowa, is showing a jolt squeezer and a jolt and stripping plate squeezer in operation to demonstrate the manner in which they are adapted to the production of many types of plain and intricate patterns. The American Foundry Equipment Co., New York, is demonstrating several types of its sand cutting machines.

Method of making cores by forcing the sand into the coreboxes under pneumatic pressure is being demonstrated by three machines which are made by Wm. Demmler & Bros., Kewanee, Ill.

Beardsley & Piper Co., Chicago, is demonstrating the possibilities of one of its portable type sand throwing machines. The machine is mounted on two racks on the floor and travels back and forth utilizing the sand heap in its passage. The machine is kept in continual operation on a wide variety of patterns and flasks. A second machine of the stationary type is on display.

Several types of machines are shown by the Davenport Foundry & Machine Co., Davenport, Iowa; Federal Malleable Co., West Allis, Wis.; Grimes Molding Machine Co., Detroit; Herman Pneumatic Machine Co., Pittsburgh; International Molding Machine Co., Chicago; the Johnson & Jennings Co., Cleveland and the Osborn Mfg. Co. Cleveland.

Molding Machines Numerous

Something new in a portable squeeze machine is shown in the booth occupied by the Milwaukee Foundry Equipment Co., Milwaukee. The machine is mounted on three ball bearing wheels 2 feet in diameter which it is claimed facilitate the movement of the machine over the sand heap. The table is supported on a light tubular member which encloses the main axle.

Wm. H. Nicholls Co., Brooklyn, N. Y. has a large display of machines in operation and is demonstrating how production may be expedited by the application of roller conveyors in taking flasks to the machines and afterward removing them either under the swing of a crane or to a branch conveyor on which they may be poured.

The booth of the C. O. Bartlett & Snow Co., Cleveland is fitted up with a photographic display illustrating installations of sand and other mechanical handling equipment. Lantern slides along the same line are shown by the Link-Belt® Co., Chicago. In addition this company also has on display sand handling equipment, conveyor rollers, anti friction idlers, sand revivifiers, car pullers and many types of chains.

Several types of sand mixing and screening apparatus are shown by the Blystone Manufacturing Co., Cambridge Springs, Pa. A working model of a sand separator and blender equipped with a new sand combing belt, also machines equipped with self loaders are shown by the Royer Foundry & Machine Co., Wilkes Barre, Pa.

The National Engineering Co., Chicago, is exhibiting an interesting piece of sand conditioning apparatus combining several units formerly installed individually.

Engineering firms engaged in the design and errection of plants are much in evidence at the show. Photographs, models and engineering data are exhibited at the booths of the Austin Co., Cleveland, Frank D. Chase, Inc., Chicago, the R. W. McIlvaine Co., Chicago, Wilbur Watson & Associates, New York, Bernard H. Prack, Pittsburgh, the Swartwout Co., Cleveland, and the Chas. C. Kawin Co., Chicago.

Companies specializing in core baking equipment are represented with several types of ovens. The F. A. Coleman Co., Cleveland, is showing an electric, rolling drawer type core oven in operation and an aluminum furnace while the Young Bros., Co., Detroit, has on display a test oven, an interesting model of a continuous oven, a model of a large japanning oven and samples of products baked. A drawer type and a trans-rack type core oven, and a tilting aluminum furnace is exhibited by the Foundry Equipment Co., Cleveland.

Bethlehem Steel Co., Bethlehem, Pa., is exhibiting an interesting line of intricate castings made with a natural alloy pig iron containing nickel and chromium. Various grades of foundry iron, coke and coal tar products are shown by E. Arthur Tutein, Boston, while Pickands, Brown & Co., Chicago constructed a complete model of a cupola and ladle, illuminated to simulate a hot metal content, the entire assembly being made of coke produced by the Semet-Solvay Co., New York.

FIG. 6—A VARIETY OF EQUIPMENT MARKED THIS EXHIBIT OF SAND BLAST APPARATUS

Nonferrous metals for special uses are shown by a number of producers. Metal & Thermit Corp., New York, has a new alloy of tungsten, chromium and cobalt which has been developed for the manufacture of cutting tools. Ingot metals and products made by their use are displayed by Ajax Metal Co., Philadelphia, Alloys & Products Inc., New York, International Nickel Co., New York, and British Aluminum Co., Ltd., London.

J. W. Paxson Co., Philadelphia, is showing a table and cabinet type sand blast, a sand blast barrel, and a full size cupola. Whiting Corp., and Grindle Fuel Equipment Co. exhibiting jointly, are displaying photographs, drawings and data, together with models of a number of their products.

Tool Builders See U. S. Activity

Twenty-fourth Convention in Washington Devoted To Inspection of Facilities of Government Bureaus for Assisting Industry—Code of Ethics with "Teeth" Clause Adopted—Officers Elected

FOR the first time in its history the National Machine Tool Builders' association curtailed its usual technical discussions and at its twenty-fourth annual convention held in Washington last week made room on its program for a realistic presentation of the facilities of government bureaus for assisting American industry. The innovation came as a pleasant surprise to many builders, whose eyes were opened to the opportunities presented for co-operation by governmental departments and business.

The sessions on Wednesday, Sept. 30, were devoted to consideration of reports of officers and committees, and culminated in the adoption unanimously of the association's code of ethics which has been under fire for three years. This action marks the end of the painstaking work of H. M. Lucas, A. H. Tuechter and F. L. Eberhardt, members of the committee, and the beginning of the labors of a new permanent committee of five, whose duty it will be to enforce the adopted code.

Thursday morning the tool builders met in the department of commerce building to hear addresses by chiefs of divisions of the department. The session proved a revelation of the elaborate machinery of the department, and gave the members of the association an opportunity to hear Secretary Hoover present his views on the co-operation of government with business.

In the afternoon a visit was made to the bureau of standards, and on Friday, in conjunction with the Franklin society and the Army Ordnance association, the tool builders witnessed an amazing program of ordnance demonstrations at the Aberdeen proving ground, Maryland.

Commerce Officials Show Wares to Industry

WHILE machine tool builders have been kept advised of the services offered them by the department of commerce through frequent talks by W. H. Rastall of the department at past conventions, it remained for the speakers at the Thursday morning session to give the members a real taste of the wonderful facilities of the department available for the assistance of American industry.

The session was held in the conference room of the department of commerce building, President Iles presiding. Dr. Julius Klein, director bureau of foreign and domestic commerce pointed to the significance in the action of the association in devoting an entire session to marketing. Selling and distribution, he declared, are being recognized as even more important than production and technical improvement. He declared that the old idea that Europe leads America in its knowledge of exporting practice is obsolete. Germany's one time advantage in the technique of foreign trading and England's lead in finance now are dissipated and the United States has facilities in experience and training for exporting superior to those of any country. Doctor Klein stated a transformation is taking place throughout the world which makes obsolete any previous conceptions of the opportunities for world trade. A recent trip to Europe showed him, he declared, that American goods can be marketed in many countries on a basis of service irrespective of price. He cited numerous instances to substantiate this statement.

Referring to the results of the bureau's work, he stated that in 1922 it performed 505,000 items of service for American manufacturers and in 1924 about 2,041,000 services. The increase is at the rate of about 75 per cent annually. He analyzed this governmental assistance and detailed the various functions of the bureau. The value derived from this assistance, while largely intangible, he said, can be visualized by the fact that in 173 letters from American firms received this year, business amounting to $72,000,000 is credited to the assistance given by the bureau. This indicated return, which of course is far short of the total benefits derived, is actually 24 times the cost of maintaining the bureau.

Arthur S. Hillyer, commercial intelligence division, described the functions of his office, stating that it is a clearing house for information relative to foreign markets. He read a typical report of a house in Brazil, showing that complete information is collected for the use of American exporters. He said the office has the reports of a thousand trained men in every civilized country in the world except Hawaii and Soviet Russia.

Mr. Lane, assistant chief of the Euorpean division of the bureau, spoke on the services rendered by the regional divisions. The chiefs of these divisions collect special information pertaining to their respective regions. The data includes prompt reports on factors such as exchange, wages, strikes, economic conditions, status of demand, standards of living affecting certain commodities, etc. Service also is rendered to Americans studying conditions abroad. Itineraries are suggested and other assistance given.

Henry Chalmers, division of foreign tariffs, spoke on "Avoiding the Bumps of Exporting." He explained the functions of the division in helping exporters to avoid the pitfalls incident to selling in strange foreign markets.

C. J. Junkin, division of commercial laws, declared that the service of this division is divided into four classifications, namely assistance on trade marks and patents, legal information, credit and insurance, and trade adjustments. A fifth service, relating to commercial arbitration, will be given after Jan. 1, when the new law on commercial arbitration becomes effective.

W. H. Rastall, chief of the machinery division, explained that the foregoing speakers represent only a few of the thirty-odd divisions of the department of commerce equipped to serve American industry. Speaking direct to the tool builders, he said, "You help us to help you."

E. E. Hunt, assistant to Secretary Hoover, emphasized the need of statistics in guiding business against

slumps and booms. He also referred to the work of the department of simplified practice, pointing out that the government acts only after the voluntary action of industry in asking for simplification.

The climax to this unusually instructive session came at the end when Secretary of Commerce Herbert Hoover, fresh from his call upon the president at the White House with Secretary Mellon where they presented to the chief executive the terms worked out for the retirement of the French debt, addressed the tool builders on the work of the department of commerce. It was a typical Hoover address, being a straightforward recital of the practical working of his doctrine of "government behind business and business behind government."

He touched on the work of the bureau of standards and asked industry through their trade associations to say what technical problems should be attacked by this, the greatest laboratory in the world. He referred to the work of the national screw thread commission as an example of the department's efforts to co-operate in simplification. The preparation of government specifications, involving the revision of 80 per cent of the specifications of commodities used by the government, has met with success and is being hailed by purchasing agents everywhere as a constructive step. Secretary Hoover explained why the patent office was transferred to the department of commerce from the department of the interior, and stated that whereas 18 months ago the office was 18 months behind in handling applications for patents, it now is only six months behind and by Jan. 1 will be able to handle applications upon receipt.

Referring to the statistical service of the department, Mr. Hoover defined statistics as the "raw material for good judgment in business." Statistics should be gathered partly by the government and partly by the industries themselves, he said. They afford correct judgment on the ebb and flow of economic factors and give stability. Facts hot off the griddle, he declared, are the cure for the worst blight in industry—the business slump.

He mentioned the recent Supreme Court decisions on the collection of statistics by trade associations, and said that because such statistics at times have been used illegal y, this fact is no more a just reason for discontinuing the gathering of business facts than the fact murders are committed by brickbats would be justification for stopping the manufacture of bricks or the fact automobiles are used in bootlegging would be cause for discontinuing the production of motor cars.

Turning his attention to the work of the bureau of foreign and domestic commerce, Mr. Hoover characterized the machinery of this bureau for helping exporters as a great organ and added, "We want you manufacturers to come down here and play it." The function of the bureau, he said, is to "lubricate the channels through which goods flow."

The afternoon was devoted to a visit to the Bureau of Standards. Dr. Burgess greeted the members in a short speech telling of the work of the department and its relation to the machine tool industry.

The rest of the afternoon was devoted to a tour of the department's activities where tests were observed in process along lines pertaining particularly to the machine tool industry.

New Officers

President
H. M. LUCAS
Lucas Machine Tool Co., Cleveland

First Vice President
J. G. BENEDICT
Landis Machine Co., Waynesboro, Pa.

Second Vice President
HERBERT L. FLATHER
Flather Co., Nashua, N. H.

Treasurer
EDWARD A. MULLER
King Machine Tool Co., Cincinnati

Directors for Three Years
P. E. Bliss, Warner & Swasey Co., Cleveland
Edward A. Muller, King Machine Tool Co., Cincinnati
Henry K. Spencer, Blanchard Machine Co., Cambridge, Mass.

Unanimously Adopt Code of Business Conduct

FOLLOWING a long series of committee reports at the opening session of the twenty-fourth annual meeting of the National Machine Tool Builders' association, the organization voted unanimously to adopt the principles of business conduct proposed by the committee of the code of ethics. This decision is of unusual significance, inasmuch as the code not only includes a statement of general principles but contains detailed interpretations covering every conceivable practice to which the seller or buyer of a machine tool is exposed.

Moreover this action of the association is given "teeth" by a subsequent resolution authorizing the appointment of a permanent committee of five to pass upon violations of the code, and to continue the effective betterment of trade conditions. This body, to be known as the committee on trade practice, will be appointed by the incoming administration.

The action of the convention in unanimously adopting the strict code came as a distinct surprise to many tool builders, because the attitude of the majority throughout the three years of preliminary study of the code has been one of doubt. Many prominent leaders of the industry have professed grave concern over the advisability of adopting the rules of ethics on account of the strictness of detail which they involve. Today opinion has veered to the other extreme and the sense of the convention is that the code offers a wonderful opportunity for the machine tool industry to rid itself of many inherent evils. The result, it is believed, rests entirely with the permanent committee of five, whose duties are likened to those of Judge Landis in the baseball world.

The opening session Wednesday morning in the Chamber of Commerce building was presided over by O. B. Iles, president of the association. After appointing a resolutions committee composed of W. A. Viall, Brown & Sharpe Mfg. Co.; P. E. Bliss, Warner & Swasey Co.; and E. L. Leeds, Niles-Bement-Pond Co., President Iles delivered an address in which he called attention to the principal problems confronting the machine tool industry. He declared the outlook for business is better than it has been in several years. He plead for a higher standard of business ethics in the industry and urged tool builders to give more thoughts to the methods of selling. He pointed out the great work being done by certain government bureaus and urged manufacturers to avail themselves of the opportunities offered by the government.

In the report of the general manager, E. F. DuBrul outlined the present status of the industry, stating that further improvement is in sight. He urged members of the association to give more thought to the need of exact information as a basis for studying the trend of factors in the industry and emphasized the impor-

tance of following business statistics.

Mr. DuBrul went into detail on the necessity of informing customers of the problems of the machine tool industry. He cited a paper presented at a recent convention as an example of the misconceptions held in regard to machine tool builders. He read certain excerpts from this paper, all of which indicated that the author had a decidedly erroneous idea of the tool industry. Mr. DuBrul stated that this condition is due to the failure of tool builders to discuss their business with dealers and prospective buyers.

Continuing, he urged members of the association to give thought to standardization and simplification. He warned that unless American manufacturers wake up, German standards will be in effect on all foreign machine tool business. He described the facilities for simplification afforded by the department of commerce, and suggested shaft collars as an example of many machine tool items susceptible to the simplifying process. Research, machine tool expositions and association activities were other topics discussed by Mr. DuBrul.

On the recommendation of the nominating committee, P. E. Bliss, Warner & Swasey Co., Cleveland; Henry K. Spencer, Blanchard Machine Co., Cambridge, Mass.; and Edward A. Muller, King Machine Tool Co., Cincinnati, were elected directors for a three-year term to succeed O. B. Iles, F. N. MacLeod and C. Wood Walter.

Mr. DuBrul read the report of the advertising committee, which outlined the progress made in promoting association advertising during the past six months. G. L. Irwin, Jr., sales manager, Kearney & Trecker Corp., Milwaukee, presented a subcommittee report on direct mail advertising.

In the report of the committee on obsolete parts, presented by Henry K. Spencer, procedure was recommended for supplying repair parts to customers. The suggestion that parts be furnished promptly for a period of five years after manufacture of a tool ceases met with general approval, but in the case of frames and other heavy parts two or three years was considered a sufficient time. Usual repair parts should be furnished up until ten years after manufacture ceases, but during the last five years of that period the manufacturers should not be obligated to deliver the parts promptly. After ten years it is optional with the builder as to whether or not he should furnish parts. It was generaliy agreed that prices of repair parts should at all times be based on actual cost plus a liberal margin of profit.

Major R. H. Somers, ordnance department, United States army, presented a paper on "Machine Tools and the Munitions Program" at the Wednesday afternoon session. He declared that in many ways our next war will differ from the World war and the tool problem will have a correspondingly different solution. For instance, in the next war this country might not have the advantage of munitions plants already equipped as was the case in 1916, nor is it probable allies will be engaged in holding back the enemy until this nation is ready. On the other hand, there is a better supply of material on hand, due to World war surplus; the designs of ordnance material are farther advanced; and most important, the district munitions plan is operative, insuring the prompt placing of war orders with the manufacturers who will actually make them in time national emergency. Major Somers outlined in detail how this munitions plan would work and asked machine tool builders to assist the ordnance department in developing its plans.

"Hooverisms"

THE machinery of the bureau of foreign and domestic commerce for assisting manufacturers in exporting is a great organ. We want manufacturers to come down to Washington and play it."

* * *

"The function of the bureau of foreign and domestic commerce is to lubricate the channels through which goods flow."

* * *

"Statistics constitute the raw materials for good business judgment."

* * *

"Business facts hot off the griddle are the cure for the worst blight of industry—the slump."

* * *

"The bureau of standards is the greatest physical laboratory in the world and it is for industry through its trade associations to say what technical problems it should attack."

* * *

"The fact that statistics collected by trade associations on occasion have been used illegally is no more reason for outlawing statistics thus gathered than the fact automobiles sometimes are used for bootlegging would be a just cause for discontinuing the building of motor cars."

* * *

Excerpts from the address of Secretary of Commerce Herbert Hoover before meeting of National Machine Tool Builders' association, Washington, Oct. 1.

Resuming its consideration of committee reports, the convention heard a discussion of the problem of arriving at a suitable basis of plant capacity, led by H. W. Bockhoff, National Automatic Tool Co., chairman of the committee. It was recommended that the association adopt first, an industry capacity base—the dollars of product (irrespective of type of machine) that could be produced in any given month if the plant were busy eight hours per day for 25 days; this base to be used in connection with the barometer report of dollars of orders received each month, which reports are to be made anonymously; and secondly a group capacity base for each type of machine, tied in with the monthly report of orders, shipments and stocks of each group of builders of like types of machines. These reports are to be identifiable by the office so that records may be kept straight, but only totals are to be reported to the group and no identification or disclosure of individual reports are to be made to any member. After consideration the report was adopted.

Closely allied to the problem of plant capacity is that of the barometer maintained by the association. R. E. Flanders, Jones & Lamson Machine Co., as chairman of a committee on improvement of the barometer, recommended that the average business of the years 1922, 1923 and 1924 be considered normal for the purpose of establishing a new base for the barometer. Objection to this was voiced by those who felt that the base is too low, and that if adopted it means that at present the industry is operating at 50 per cent above normal. In rebuttal it was explained that the base is merely a datum point. The report was accepted.

Howard Dunbar, Norton Co., read a report of the committee on training of salesmen, which included a comprehensive outline of five principles, namely development of sales ability, development of knowledge of product, familiarity with company's policies, familiarity with finance and development of personality. This outline will be presented in detail in an early issue of IRON TRADE REVIEW.

In presenting the report of the committee to co-operate with the department of commerce, J. E. Andress, Barnes Drill Co., emphasized the need of adopting a reclassification of power driven machine tools for the biennial census and for export statistics. The suggested classification will be published in a later issue.

Would Confine Making of Gears

American Gear Manufacturers' Association at Its Semiannual Meeting Believes Industry So Specialized That Gear Users Should Not Attempt To Supply Own Needs—Recommended Practice Adopted

COMMITTEE reports and committee work on standardization commanded major attention at the semiannual meeting of the American Gear Manufacturers' association at West Baden, Ind., Oct. 1-3. Some committees recommended new standards of practice while others reported progress. Plans for active furtherance of standardization work this winter in the hope of shaping up many pending codes for the spring meeting were laid by all 13 committees.

In the customary president's opening address, E. J. Frost, Frost Gear & Machine Co., Jackson, Mich., urged wider acceptance of the standards already promulgated, favored closer relations with universities and technical schools and bespoke co-operation with the government in its preparedness program. The public policy committee reported the federal specifications board not yet ready to take up machinery specifications.

The meeting adopted a code for the inspection of disk gear cutters as submitted by the inspection committee through its chairman, F. G. Eppley, Albaugh-Dover Mfg. Co., Chicago. The proposal at a previous meeting that the association hire an accountant to visit members' plants and expedite the installation of uniform cost accounting was discussed but not acted upon. The commercial standards committee entered a plea for the manufacture of gears to be intrusted completely to the specialized gear-making industry. Recommended practice for steel castings for gears, submitted by the metallurgical committee was adopted at the final session. The spring meeting of the association will be held in Detroit next May.

Urges More Uniformity in Steel Production

A PAPER, "Improvements Needed In Automotive Steels", by Walter G. Hildorf, consulting metallurgist, Reo Motor Car Co., Lansing, Mich., asserted the chief problem to be that of obtaining greater uniformity from heat to heat rather than of attempting to produce new steels. He claimed it should be possible "to obtain heat after heat of the same steel which could be forged, treated and machined alike; also, to use a standard heat treatment and obtain hardness and physical properties within the limits usually allowed for that particular steel."

Mr. Hildorf pleaded the case of the consumer for steel that is cleaner, more free from seams, normal, having a silky fibrous structure as contrasted with a reedy or crystalline structure, and finer grained. With the finer grained material it is possible to obtain both case and core simultaneously, he contended. Comparing steel with a large and small grain, both normal, he found the large grain grows readily, the small grain remains small, the small grains seem to go into solution more readily, small grained steel absorbs carbon slower, and small grained steel has a wider hardening range.

Summarizing, Mr. Hildorf said:

"Steel companies should maintain a system of inspection such that seamy stock which would cause the customer trouble would be stopped at the mill. It should be possible to obtain a more uniformly dense structure—freedom from soft and spongy centers. Improvements have been made in the cleanliness of steel, yet the average quality is not satisfactory to the automotive metallurgist. Regardless of whether it is possible by the use of salt baths to harden abnormal steels or not, the fact still remains that abnormal steel is more prone to give soft spots than normal steel. Therefore it is hoped that steel companies will find it possible so to improve their practice that abnormal steels can be eliminated. Fracture testing opens up a wonderful field for the improvement of automotive steels. Grain size varies enormously from heat to heat. It is hoped that considerable work will be done along this line, because fine grained normal steels seem to be much better than coarse grained steels."

E. C. Smith, Central Steel Co., Massillon, O., in the ensuing discussion cited the extremely high temperatures at which producers must work and ingot design as two of the problems to be considered in the matter of spongy centers. By way of showing the difficulties encountered by producer he declared it frequently the case that a heat passing five inspections and showing up well under the microscope at the mill fails to satisfy the buyer. S. C. Spalding, Halcomb Steel Co., Syracuse, N. Y., declared it difficult to eliminate all dirt but maintained that producers are making progress in this direction. The co-operation of producers to meet the needs of the automotive industry was pledged by N. L. Deuble, United Alloy Steel Co., Canton, O.

Results of efficiency and durability tests on soft gears, using the Lewis type machine at the University of Illinois, were described in an illustrated talk by C. W. Ham, associate professor of machine design, University of Illinois, and J. W. Huckert, assistant professor of mathematics, University of Louisville. The gears used were cut in accordance with commercial requirements, without any refinements. Tooth loads up to 1500 pounds per square inch of face were used for the efficiency tests, while for the wear tests the teeth were subjected to steady loads of 1000 and 500 pounds per square inch of face for the 1 and 2-inch faced gears, respectively. A medium oil was delivered to the teeth at the pitch line where the teeth went into mash. Considering tooth friction only, the following conclusions on efficiency were reached:

(1) The efficiency of unhardened gears is practically independent of the quality of oil used for lubrication, provided the quantity is sufficient to prevent heating and cutting.

(2) The efficiency is independent of the speed within the range covered by the investigation—60 to 1500 feet per minute.

(3) The efficiency does not appear to be influenced by the obliquity of action.

(4) For all practical purposes the efficiency is independent of the load transmitted. The value of 99 per cent is suggested for use in computations dealing with the efficiency of unhardened gears cut in accordance with good commercial practice.

(5) Condition of tooth surface is

the most important of the factors which affect the efficiency of unhardened gears. Gears with rough tooth surfaces are less efficient than those in which the tooth surfaces have become glazed, but the difference in efficiency is not so great as commonly assumed.

(6) When all other conditions are the same, greater sliding action causes the longer addendum gears to have a slightly lower efficiency than the shorter addendum gears. On the other hand, the vibration of the longer addendum gears may, for certain practice, be so much less than that of the shorter addendum gears as to result in a slightly higher efficiency of the longer addendum gears.

(7) The difference in efficiency of the several standard tooth forms in common use is so small as to exercise no controlling influence on the tooth form to be recommended or adopted for any purpose.

The following conclusions were reached on durability:

(1) Unhardened steel pinion teeth quickly wear to outlines other than true involutes, regardless of load, speed and lubrication; and after this occurs wear practically ceases or is greatly retarded under ordinary operating conditions.

(2) The teeth of cast iron gears meshing with steel pinions fail by crushing of the material in the region of the pitch line.

(3) The teeth of unhardened steel pinions meshing with cast iron gears fail by abrasive action which wears off the face of the tooth and hollows out the flank, resulting in general in a final outline of double curvature.

(4) Lubrication is an important factor in the life of unhardened gears. Although the quantity of lubricant does not materially affect the final change in tooth outline due to wear, it postpones the beginning of a rapid wear of both pinions and gear and thus greatly prolongs the life of the gears.

(5) Under the same conditions of load, speed and lubrication, the wear increases with greater sliding action but these tests indicate that the amount of sliding and amount of wear are not necessarily proportional.

(6) Combinations of factors or conditions which cause excessive vibration have a detrimental effect on the durability of gear teeth.

(7) Surface pressure is the most important of the factors which affect durability. Apparently for any pair of gears there is a critical surface pressure, governed by the properties of the materials, above which the life of gears is short and below which the gears will run indefinitely without any appreciable wear.

(8) For unhardened gears under constant load and free from impact loads the allowable tooth loads based on the Lewis formula for strength are in excess of those permissible for satisfactory durability.

(9) Unhardened gears for constant load transmission should be designed for durability rather than strength. A gear tooth that is durable for a given load will, in general, be amply strong.

When machines varying widely in cost are used, the machine hour rate is the proper basis for prorating shop overhead, declared E. A. Kebler, president, Fawcus Machine Co., Pittsburgh, in his paper "Machine Hour Rate the Ideal Foundation for Gear Estimates and Costs." Mr. Kebler said:

"A machine hour rate is the relative cost of operating on production work, a bench hand, erector, fitter or a machine, and this rating is only used to prorate the indirect manufacturing expense. Director labor and direct material are, of course, charged to jobs. Administrative and selling expense is usually prorated by productive hours. The chief advantage of the machine hour rate is that each machine carries a burden proportionate to its cost of operation. For example, one company has seven rates. Rate 6, for instance, carries six times more of the actual shop overhead to the order than if a Rate 1 machine had been used. These rates are fixed by a survey of the plant and by comparing the cost of operating each machine.

Outlines Qualifications for a Gear Inspector

IN A paper, "Measuring Gear Teeth," J. L. Williamson, research engineer, Fellows Gear Shaper Co., Springfield, Vt., gave eight essential qualifications for the highly-trained inspectors. They are thoroughness, a receptive mind, an analytical mind, creative ability, keen appreciation, a co-operative spirit, an exacting nature and a tactful sense. He said:

"The degree to which inspection is carried depends upon the class of material which is being produced. Gear cutting methods have been developed to the point where precision work can be obtained on a quantity basis. We no longer think of gears simply as a means of transmitting power and motion. While these are still their chief function, the nature of their application presents many interesting problems. For this reason our manufacturing limits should be based upon actual operating conditions. We should study the combined effect of the errors. This should not be confused with the investigations being conducted to determine the effect of tooth shapes and errors on strength, durability, quietness, etc. It is an entirely different problem. It deals with errors which occur in combinations, such as spacing and tooth form; spacing, tooth form and eccentricity; eccentricity and spacing, etc.

"This can hardly be determined from a tabulation of variations in tooth parts. The relation that one bears to the other is too complex to be easily understood. More and more we are coming to realize that the day of single dimension measurements is fast passing and that our rejection limits should be based upon actual operating conditions. It is not infrequent that gears which have passed inspection are found unsatisfactory for service, while gears which will not pass inspection give no trouble when assembled."

Speaking on "Hardening by the Dilatometer Method," Stanley P. Rockwell, president the Stanley P. Rockwell Co., Hartford, Conn., said that "Warpage of gears and gear tools in heat treatment has always been a bugbear to the gear maker. Success once with a certain heat treatment has not necessarily meant success when an attempt has been made to duplicate it. Preparation of parts prior to the final heat treatment is important but the final heat treatments are more so. Heat treatment is accompanied by change in volume of the material. A dilatometer consisting of a simple lever arranged to magnify motion 500 to 1 has been devised to indicate or record these volumetric changes. Changes in volume are shown instantly. A dilatometer equipment for gear tools consists of an electric furnace with dilatometer attachment."

Paraphrasing the recent address of C. J. Graham, president of the Bolt, Nut and Rivet Manufacturers institute, the commercial standardization committee pointed out the evils of gear users supplying their own needs. The gear industry has become so specialized it cannot be operated as a sideline, the committee declared.

"If we can convince those who are cutting their own gears that it will be to their advantage to let us supply them and for them to confine their energies to their own products, we can operate our plants on a normal basis," the committee reported.

The transmission division of the differential and transmission committee suggested nomenclature for the conventional three-speed transmission. Appropriate committees submitted recommended practice for steel castings for gears, for interchangeable gears by the combined involute and cycloidal curve system, and for computing the horsepower of nonmetallic spur gears composed of laminated phenolic materials or rawhide.

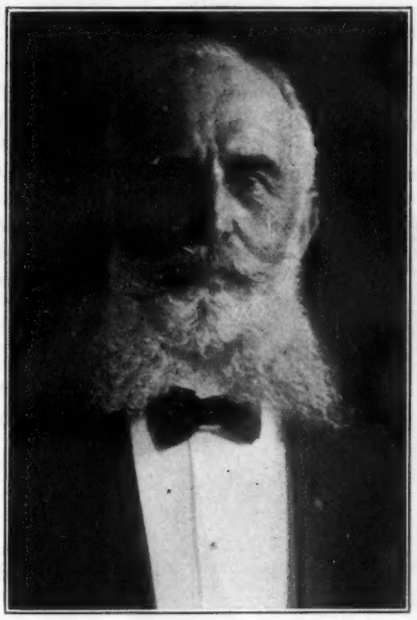
Industrial Men in the Day's News

Dr. Richard Moldenke, Awarded First Joseph S. Seaman Gold Medal

COUNTLESS contributions to the metalworking industries have brought him unusual recognitions and honors.

JUSTLY fitting is this tribute by the American Foundrymen's association in reward for his years of devotion to its growth and progress.

SCHOLAR and educator, his hobby has been technical writing with cast iron as his special delight.



FORMAL recognition of his many contributions to the foundry industry is being made by the American Foundrymen's association to Dr. Richard Moldenke in the award to him of the Joseph S. Seaman gold medal, at this week's convention of that organization at Syracuse. Dr. Moldenke has been identified with the foundry industry for many years, having become a member of the Pittsburgh Foundrymen's association in 1897 and the national association a few months later.

Prolific in his technical writings, he has enriched available literature on foundry practice, his special interest being cast iron. His activities in technical and professional societies have been extensive and his work on committees and in research has contributed much to foundry progress. His latest important work has been in the advancement of an international standard for comparison of cast iron. In this work he has served with Walter Wood and other prominent foundrymen, being chairman of the American Society for Testing Materials committee on cast iron.

Dr. Moldenke is an honorary member of the American Foundrymen's association, the Institute of British Foundrymen and the Pittsburgh, New England and Newark Foundrymen's associations. He was vice president of the American Society for Testing Materials and holds active membership in the American Institute of Mining Engineers, the American Society of Mechanical Engineers, the American Electrochemical Society, the Iron and Steel institute, and the Verein Deutscher Eisenhuttenleute. He served for some years as secretary and treasurer of the American Foundrymen's association. Dr. Moldenke has received many civic honors, having been appointed by President Roosevelt to his first conservation board. He also filled an honorary capacity in connection with the bureau of mines. In New Jersey he served as vice president of a state board for ten years. Besides his state work he served in connection with hydrographic surveys of the United States coast and geodetic survey.

Dr. Moldenke was born in Watertown, Wis., Nov. 1, 1864. He went to New York with his family where he attended school. He was graduated from the Columbia university school of mines, as an engineer of mines in 1885. After two years of teaching he returned to receive his doctor of philosophy. In 1889 he organized the electrical engineering department at the Michigan School of Mines, Houghton, Mich. The next year he became a metallurgist for McConway & Torley Co., Pittsburgh. Then started his interest in foundries and foundry associations. In 1899 Dr. Moldenke aided in organizing the Pennsylvania Malleable Co., Pittsburgh, and acted as superintendent until production was well under way, when death of his father-in-law compelled him to return to New York to look after other important interests.

In the meantime he had been elected secretary of the American Foundrymen's association, and was doing considerable consulting and research work. He still is engaged in research work, having a small experimental foundry at his home in Watchung, N. J.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

PAUL LLEWELLYN has been elected president of the Interstate Iron & Steel Co., Chicago, succeeding to the post vacated by the death of his father, Silas J. Llewellyn, Sept. 3. The new president of Interstate was born at Milwaukee, Sept. 1, 1886. Following a preparatory course at the Mercersburg academy, Mercersburg, Pa., he

HENRY A. TAUBENSEE

entered the Sheffield scientific school of Yale university, in 1905, to pursue a three-year course in mechanical engineering.

In 1908 he literally began at the bottom with his father's company, going to the Interstate plant then at Cambridge, O. Starting in the roll turning department, he later went to the shipping department and then was made assistant superintendent. From 1910 to 1912 he was works manager at Cambridge.

In 1912 Mr. Llewellyn was made assistant works manager at the Interstate plant at East Chicago, Ind. Two years later he was promoted to the full managership, and in 1916 he also assumed direction of the South Chicago plant. From 1914 to 1916 he supervised the reconstruction of the former Cambridge branch, at Marion, O.

In February, 1918, Mr. Llewellyn entered military service as a captain in what was later the chemical warfare service. Seven months later he was promoted to major, the rank he held when discharged in March, 1919. At that time he returned to Chicago, taking a post in the sales department.

In 1921 he was made sales manager of the bar division and a year later was chosen vice president in charge of all sales. This post he occupied until his election to the presidency, Sept. 29. For a number of years he has been a director of the company. Mr. Llewellyn, whose hobby is horses, lives on a farm west of Lake Forest, Ill. He is a member of the American Iron and Steel institute.

* * *

W. S. Pilling, Pilling & Co., and H. C. DuBois, vice president of E. J. Lavino & Co., Philadelphia, have returned from Europe.

* * *

Col. Carmi A. Thompson, prominent iron ore trade authority, formerly president of Tod-Stambaugh & Co., Cleveland, iron ore interests, was elected national commander of the Spanish War veterans in their annual session at Florida recently.

* * *

Henry Hamilton Seabrook, Philadelphia district manager of the Westinghouse Electric & Mfg. Co., was honored recently by his associates, celebrating his twentieth anniversary as an executive and his twenty-fifth consecutive year in that organization.

* * *

Charles B. Scott, Chicago, was elected president of the National Safety council at the fourteenth annual congress in Cleveland, Sept. 28-Oct. 2. He was one of the founders of the national council and has attended every national congress. He is director of the bureau of safety of Chicago, an organization maintained by leading public utilities in the Middle West. During the past year he served as vice president in charge of finance and treasurer of the national council.

* * *

Henry A. Taubensee has been appointed general manager of sales of the Superior Sheet Steel Co., Canton, O., succeeding R. L. Krickbaum. Mr. Tausensee started his sheet metal activities with the Canton Art Metal Co., Canton, O., in 1916. Later he was with the Massillon Rolling Co. as assistant general manager of sales, which position he left to take charge of the Chicago office of the Superior company. Henry A. Roemer is president of the Superior Sheet Steel Co.

* * *

J. D. Jones, general manager of the

H. M. LUCAS
New President National Machine Tool Builders association

Algoma Steel Corp., Saulte Ste. Marie, Ont., recently was elected director of the Lake Superior Corp., the Algoma corporation and its subsidiaries.

* * *

Vaughan E. Montgomery, who resigned recently from the Cincinnati office of Rogers Brown & Crocker Bros., Inc., now heads the V. E. Montgomery Co., that city, pig iron, coal, coke and feroalloy interest. His offices are at 1102 Carew building, Cincinnati.

* * *

William Wallace Atterbury, on Sept. 30 was elected president of the Pennsylvania Railroad Co., succeeding Samuel Rea, retired under the company's pension regulations. Mr. Rea, who was 70 on Sept. 21, remains a director. Mr. Atterbury was vice president for 16 years, and is widely

known among railroad executives. Mr. Atterbury, who is 59, was born in New Albany, Ind., and was graduated from Yale university, immediately afterward entering the railroad industry.

* * *

Robert H. Kelley, West Englewood, N. J., has resigned as secretary of the American Foundry Equipment Co., New York.

* * *

Frank L. Allen has left the E. A. Kinsey Co., Indianapolis, as sales manager and expects to occupy a similar position with the E. L. Essley Machinery Co., Milwaukee.

* * *

J. L. Jones, manager of the experimental laboratory of the Westinghouse Electric & Mfg. Co., has been made chairman of the gray iron castings committee of the American Foundrymen's association.

* * *

James B. Armstrong has been appointed New York district sales manager for the Lebanon Drop Forge Co., and the Lebanon Steel Foundry, Lebanon, Pa., with offices at 303 Fifth avenue, New York.

* * *

J. H. Wood, formerly of the Eastern Machinery & Equipment Co., Philadelphia, dealer in used machinery, has gone out of business and now is with the Southwark Foundry & Machine Co., that city.

* * *

H. D. Westfall, who has just assumed his new duties as vice president in connection with the sales department of the Weirton Steel Co., Weirton, W. Va., resigned from Wheeling Steel Corp., Wheeling, W. Va., as announced in IRON TRADE REVIEW, Aug. 6.

* * *

J. M. Robinson formerly manager of the Grand Rapids office of the Lincoln Electric Co., Cleveland, has been transferred to Detroit and is to have charge of the Detroit section. G. W. First has been changed from the Boston to the Grand Rapids office and J. E. Durstine goes from the Chicago to the Buffalo office.

* * *

W. R. Browne, for six years plant and production manager of Milliken Bros. Mfg. Co., Inc., New York, manufacturer of steel transmission and radio towers, has resigned to assume the general managership of Gehret Bros., Inc., Bridgeport, Pa. Mr. Browne's change is effective early in October.

* * *

H. H. Hines has been appointed resident sales agent for the Bethlehem Steel Co. at San Francisco, with headquarters in the Matson building. He succeeds H. B. Green recently resigned. Mr. Hines has been with Bethlehem since 1921, having been resident agent at Syracuse from 1922 to 1923 and in August 1924 being sent to Toronto where he established offices of the Bethlehem Steel Export Co.

* * *

Myron T. Herrick, ambassador to France, has been elected honorary chairman of the board of the Union Carbide & Carbon Corp., New York, advancing from active chairman which he had been since Nov. 8, 1917.

George A. Knapp, former president was elected chairman of the board. Jesse J. Ricks, former vice president, became president. M. J. Carney and G. W. Mead continue as vice presidents, while Benjamin Oshea and W. J. Knapp were elected additional vice presidents.

The board accepted the resignation of E. F. Price as vice president, at the same time adopting resolutions of tribute to his 30 years of active management of the company and many of its subsidiaries. Although retiring as an active officer, Mr. Price will continue in a consulting and advisory capacity, while devoting his time to his own business interests and recreation.

* * *

W. H. B. Ward, vice president and superintendent of operation of the Trumbull Steel Co., Warren, O., has resigned as superintendent but remains as officer and director. He has been connected in a managerial capacity with the company since its formation.

Fred W. Wille, consulting engineer, also has resigned. The offices of William M. McFate, vice president and A. L. Button, secretary, have been discontinued and the duties allocated to other officers. Both men have resigned from the company.

Obituaries

CLARENCE O. BARRIE, general superintendent of equipment and maintenance of the Allis-Chalmers Mfg. Co., Milwaukee, and W. R. Fortney, mechanical engineer, Waynesborough, Pa., were fatally injured on Sept. 28 when Mr. Barrie's automobile was struck by a Milwaukee road flyer at Cudahy, a suburb of Milwaukee, on their way from the main works at West Allis to the former Worthington Pump & Machinery Corp.'s Cudahy plant, the business of which recently was acquired by the Allis-Chalmers company. Mr. Barrie was a widely known mechanical engineer and production authority and entered the Allis-Chalmers service in 1906. He was 51 years of age. Mr. Barrie returned only a few weeks ago after spending three months in Europe on business.

* * *

Edward W. Parker, a retired salesman for the Republic Iron & Steel Co., Youngstown, O., died recently at the age of 81, at New York.

* * *

Charles Oscar Johnson, president and general manager of the Worcester Wire Works Inc., Worcester, Mass., died recently at his home. He was born in Orebro, Sweden, 59 years ago, and has been prominent in the wire fabricating industry for many years. He is responsible for the development of several automatic wire forming machines.

* * *

Daniel W. McCarthy, secretary of the Julian Pump Co., Jamestown, N. Y., died Sept. 25 at his home there, aged 53. His death was due to heart disease. He was a nationally known dog fancier.

* * *

William B. Dukeshire, treasurer of the Dukeshire Steel & Forge Co., Maspeth, L. I., died Sept. 25 in the Long Island college hospital, aged 36 years. Mr. Dukeshire was educated at Stevens Institute of Technology and formerly was treasurer of the Century Steel Co., Poughkeepsie.

* * *

Harrison P. Reed, general manager of the A. Kieckhefer Elevator Co., Milwaukee, manufacturer of electric freight and passenger elevators, died Sept. 27 from the effects of an operation for abscess of the brain. He had been ill only a few days. Mr. Reed was born in Milwaukee in 1886 and was a graduate in electrical engineering from Cornell university. For some years he was manager of the elevator department of the Cutler-Hammer Mfg. Co., resigning May 1, 1922, to take the general management of the Kieckhefer company.

British Steel Trade Is Troubled

(*Concluded from Page* 923)

engineer here has this week received from Hamburg a comprehensive list of offers quoting f.o.b. prices for mild steel bars £5 8s ($26.09) joists £5 4s ($25.22) wire rods £5 16s ($28.13) and steel plates ⅛-inch thick £7 2s ($34.43). Mild steel hoops are offered at £6 5s ($30.31) and bright drawn bars £9 18s ($48.02), with other prices in proportion. The general expectation is that the scarcity of money in Germany, which has led to the realization of steel at low prices, will inevitably increase the exports to this country, although the business done so far, outside a certain amount of cold-rolled material, is not of much importance. Tube makers, however, are finding keener competition in the overseas markets, recalling the formidable conditions existing before the war.

Weakness is a general feature of the pig iron market. The recognized price for No. 3 G.M.B. is £3 7s 6d ($16.36) although this is not a firm figure. The Cleveland shipments for September, so far, totaled about 6000 tons less than for the corresponding period of August. Continental pig irons are now so cheap that Cleveland is very nearly out of the foreign market. The home demands have improved a little, but there is no inclination to buy forward. East Coast hematite is quoted at £3 14s 6d ($18.06). The smelter is getting a little assistance from somewhat cheaper coke 18s 6d ($4.49) being accepted for Durham furnace coke delivered at Middlesbrough. The supply of this fuel is abundant, and prices are weak.

Progress has been made in the consideration of the proposed pooling scheme for the regulation of output in the tin plate trade. At a meeting in Swansea Sept. 22, the principle of pooling regulation was adopted, but the scheme in its full details is to be considered next week. Manufacturers anticipate that the somewhat heavy penalties imposed for excess production will necessarily limit the output and raise prices. At present, these are on the basis of 19s 6d ($4.73) though occasionally somewhat less is expected.

From the point of view of the steelmaker, the reinstatement of the stabilization scheme would have been preferable since this largely assisted in the use of works steel as against foreign. The tinplater, obviously, means to reserve his freedom to buy foreign steel on the best market conditions.

Last week's shipments of tin plate reached the unusually large figure of 166,727 boxes, indicating a fairly large worldwide demand for tin plate. There is no great buying at present, and Far Eastern business is necessarily restricted to some extent by Chinese political troubles. Apparently, the general buyer does not anticipate any material increase in price from the pooling scheme, as he shows no particular anxiety to re-enter the market.

The galvanized sheet trade continues brisk, with a steady demand and good bookings by most markets on the £16 5s ($48.81) basis. The demand for thin gages is well above the average and there is a certain amount of buying into the new year. The Scotch mills are getting a fair proportion of this trade.

British Export Prices on Lower Level

London, Sept. 22.—(*European Staff Service*)—Board of Trade returns for August, 1925, give average British export prices per gross ton for a certain number of iron and steel products.

The following table shows the price of seven of the principal commodities which have been exported from Great Britain. Compared with those prevailing in the corresponding period of last year, prices generally have dropped. The price of foundry pig iron was 2s 4d ($0.56) more than in July 1925 but 11s 6d ($2.74) less than in August, 1924; ferromanganese was £1 2s 5d ($5.43) less than in the preceding month and £3 7s ($16.23) more than a year ago. The price of carbon billets was £4 3s 7d ($20.26) less than in July this year and £1 15s ($8.45) less than in August last year; beams were 19s 8d ($4.72) less than a month ago and £1 4s ($5.81) less than in the corresponding period of last year. Galvanized sheets were 1s 2d ($0.28) less than in the preceding month and £1 12s 7d ($7.87) less than in August, 1924, tinplate was 13s 5d ($3.22) less than a month previously and £2 19s ($14.26) less than a year ago. Plates were £1 2s 7d ($5.47) less than in July this year and £1 14s 4d ($8.29) less than in August last year.

	£	s	d	$
Foundry Pig iron	4	10	9	21.98
Ferromanganese	15	6	0	74.19
Carbon billets	12	3	0	58.92
Beams	8	17	0	42.88
Galvanized Sheets	19	1	7	92.72
Tinplate	21	14	2	105.25
Plates	9	16	5	47.59

German Steel Combines Give no Relief

BERLIN, September 19. (*Special European Service*).—Although the situation in the German iron market shows no improvement, progress is being made in consolidation in the industry. Negotiations between the seven leading producers in the Rhenanian-Westphalian district continue and the latest report is that the works concerned propose to dissolve for the purpose of forming a new share company. No definite decisions, however, have been reached. If the project is completely carried out the new combine will have a productive capacity for raw steel of 7,627,000 metric tons, representing more than 50 per cent of the 15,000,000 tons capacity covered by the German raw steel association, with a coal producing capacity of 46,962,000 metric tons, or about 30 per cent of the total capacity of the German coal syndicate. In regard to pig iron, the percentage will also be about 30 per cent. The new combine will therefore be the dominant factor among all the German iron, steel and coal syndicates. Equal progress is being made in the formation of combines among the Silesian iron and steel producers as in the German chemical and oil industry.

This policy of combination is the inevitable sequel to the difficulties under which German industry now suffers. Dismissals of workmen tend to increase, and of the 210,000 workers and employes engaged in the Rhenanian-Westphalian iron and steel industry the dismissals at the beginning of July numbered no fewer than 14,500; considerable increases in the total have taken place since that time. The financial position of the works is unsatisfactory and only recently the Sichel combine, which has iron trade interests, in addition to carrying on other industries, collapsed. The general shortage of money has not yet been overcome, with the result that consumers are still reluctant to do business. In many instances owing to the necessity of realizing cash they are liquidating stocks and numerous advertisements are to be seen offering material at cheap rates. A recent example is that of a south German machine concern which sold 3500 tons of bars and structural shapes to raise money for the payment of workmen.

The improvement anticipated from the formation of the several combines is not yet in sight. A number of them have begun to sell at their official prices but as traders have fair tonnages bought at lower prices they are severely underbidding manufacturers. For example, while the selling price fixed by the bars association is 135 marks, merchants are offering bars at 126 to 128 marks. Railmakers have formed a rail syndicate and manufacturers of wire ropes are negotiating with the view to a combination. As iron merchants are also combining their forces the whole business of production and distribution in the German iron trade will shortly be in the hands of syndicates.

The market continues slack and further curtailment of production for October is anticipated. The plate and sheet business is in a poor state and deliveries of sheets can now be obtained within eight to ten days. Shape producers are offering semi-finished goods on the domestic market at low prices. The pig iron market does not improve and as increasing tonnages of English pig iron are now imported a reduction of German prices is considered likely. Export business also shows no improvement and the outlook is discouraging in view of the keen Belgian and French competition. Some orders for wire have been booked for the Orient.

News of Societies

STEELMAKING practice will be discussed at the second meeting of the open-hearth committee of the American Institute of Mining and Metallurgical Engineers at Hotel Cleveland, Oct. 13 to 15. Arrangements have been made for a visit to the plants of the Youngstown Sheet & Tube Co. and the Republic Iron & Steel Co., Youngstown, O., Oct. 12. The program of the meeting follows:

Tuesday, Oct. 13

MORNING AND AFTERNOON

Opening address by J. V. W. Reynders, president of the institute and Prof H. M. Boylston, head of the department of mining and metallurgy, Case School of Applied Science, Cleveland, and president of the Ohio section of the institute. Furnace designs will be discussed by Chairman Kent Harrison, Donner Steel Co., Buffalo; R. J. Cain, Bourne-Fuller Co., Cleveland; Frank King, Weirton Steel Co., Weirton, W. Va.; Kenneth McCutcheon, American Rolling Mill Co., Middletown, O.; and J. R. Mountain, Trumbull Steel Co., Warren, O.

Wednesday, Oct. 14

MORNING AND AFTERNOON

Discussion of the findings of the committee on "Practice and Yield." This committee includes G. D. Tranter, American Rolling Mills Co., Middletown, O.; William Kitto, Pittsburgh Steel Co., Pittsburgh; A. W. Smith, Youngstown Sheet & Tube Co., Youngstown, O.; B. P. Wheeler, Bethlehem Steel Co., Bethlehem, Pa.; R. L. Levantry, Republic Iron & Steel Co., Youngstown, O.; and H. B. Hubbard, Inland Steel Co., Chicago.

EVENING

Banquet in conjunction with the Ohio section of the American Institute of Mining and Metallurgical Engineers at Hotel Cleveland.

Thursday, Oct. 15

MORNING

Report of the committee on refractories composed of Chairman G. V. Bole, bureau of mines, Washington; A. R. Maxwell, Pittsburgh Steel Co., Pittsburgh; N. E. McCallum, Phoenix Iron Co., Philadelphia; and M. C Shannon, Gulf States Steel Co., Birmingham, Ala.

* * *

A. S. M. E. Changes Meeting Date

The date of the annual meeting of the American Society of Mechanical Engineers has been extended, it is announced, to run from Nov. 30 to Dec. 4 instead of closing on Dec. 3. This meeting will be held in the Engineering Societies' building, New York.

* * *

Hardware Men to Meet

Members of the National Hardware association of the United States will convene at Atlantic City, N. J., Oct. 19-23 for the thirty-first annual convention of the society. The metal branch will hold its session at 2:15 p.m. Thursday, Oct. 22, with Chairman W. H. Donlevy, Carter, Donlevy & Co., Philadelphia, presiding. Several interesting papers have been planned for this session, including "The Relationship Between Mills and Distributors," by Thomas Evans, Merchant & Evans Co., Philadelphia. Progress being made by the sheet steel trade extension committee will be reported by Murray Springer, general director, Pittsburgh.

* * *

Fabricators Announce Meeting

The annual convention of the American Institute of Steel Construction will be held at White Sulphur Springs, W. Va., Nov. 11-14 and will present a program of unusually varied activities. In view of the recent controversy which has arisen as a result of the tentative governmental report regarding steel construction practices, this meeting will be observed with considerable interest. Secretary of Commerce Hoover has been invited to address the members at the annual banquet, which will be held on Thursday, Nov. 12. Franklin D. Roosevelt, president of the American Construction council and formerly assistant secretary of the Navy, also will be a speaker. A special program has been arranged for the ladies who attend the convention. The program of meetings is as follows:

Wednesday, Nov. 11

MORNING

10:00 a. m.—Address of welcome, C. Edwin Michael, Virginia Bridge & Iron Co., Roanoke, Va.

10:45 a., m.—Response, J. L. Kimbrough president, American Institute of Steel Construction.

11:00 a. m.—Annual business meeting.

12:30 p. m.—Luncheon and report of committee on improvement in selling methods.

AFTERNOON

2:30 p. m.—Report of Executive Director Charles F. Abbott.

3:15 p. m.—Report of Chief Engineer Lee H. Miller.

4:00 p. m.—Reports of committees on publicity, traffic, uniform method of cost accounting, and technical research.

Thursday, Nov. 12

MORNING

9:30 a. m.—"Fireproofing of Structural Steel," by B. C. Collier, Cement Gun Co., Allentown, Pa.

10:30 a. m.—"Fabricating Structural Steel With the Electric Arc Process," by R. A. Storm, Morgan Engineering Co., Alliance, O.

11:30 a. m.—"An Investigation to Determine the cause of Rivet Failures," by A. E. Spencer Jr., Pittsburgh Screw & Bolt Co., Pittsburgh.

AFTERNOON

12:30 p. m.—Luncheon and address, "Structural Steel in the Earthquake Zone," by John L. Clymer, California Institute of Steel Construction, San Francisco.

2:30 p. m.—"Tests of I-beams Encased in Concrete," by Dean H. M. MacKay McGill university, Montreal, Canada.

3:15 p. m.—"The Need of Further Technical Research in the Structural Steel Industry," by Prof. George F. Swain, Harvard university, Cambridge, Mass.

4:00 p. m.—"Apprenticeship Systems in the Building Trades," by H. A. Frommelt, Milwaukee, Wis.

EVENING

7:00 p. m.—Annual banquet, Hotel Greenbrier.

Address by Herbert Hoover, Secretary of Commerce, Washington.

"The need of Co-operation in the Construction Industry," by Franklin D. Roosevelt, president, American Construction council.

"The Relation of the Government to Industry," by Senator George H. Moses, Washington.

"The Relation of Finance to the Construction Industry," by Channing Cox, First National bank, Boston.

Friday, Nov. 13

AFTERNOON

1:00 p. m.—Luncheon and address, "More structural Steel in Farm Buildings, Residences, Garages and Apartment Houses," by Henry R. Brigham, National Association of Real Estate Boards, Boston.

2:30 p. m.—"The Structural Steel Industry and Its Future," by H. A. Fitch, Kansas City Structural Steel Co., Kansas City, Kans.

3:00 p. m.—Business meeting.

Saturday, Nov. 14

Golf tournament.

Convention Calendar

Oct. 5-9—American Foundrymen's association. Convention and exposition at State Fair Grounds, Syracuse, N. Y. C. E. Hoyt, 140 South Dearborn street, Chicago, is secretary.

Oct. 12-16—American Gas association. Annual convention and exposition at Atlantic City, N. J. Alexander Forward is secretary-manager.

Oct. 19-23—National Hardware association. Thirty-first annual convention at Atlantic City, N. J. T. James Fernley, Philadelphia, is secretary-treasurer.

Oct. 21-23—American Welding Society. Fall meeting and exhibition at Massachusetts Institute of Technology, Boston. M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.

Oct. 23—American Iron and Steel institute. Fall meeting at Commodore hotel. E. A. S. Clark is secretary.

Oct. 28-30—National Association of Farm Equipment Manufacturers. Annual convention at Congress hotel, Chicago. H. J. Sameit, 608 South Dearborn street, Chicago, is secretary.

Nov. 11-14—American Institute of Steel Construction. Annual convention at Hotel Greenbrier. White Sulphur Springs, W. Va., Charles F. Abbott is executive director.

Nov. 30-Dec. 4—American Society of Mechanical Engineers. Annual meeting in Engineering Societies' building, New York. Calvin W. Rice, 29 W. 39th street, New York, is secretary.

Babbitt Sales Again Up

Washington, Oct. 6.—Babbitt metal consumption in August totaling 5,441,823 pounds was larger than that of July at 5,184,196 pounds and June at 5,034,965 pounds, according to reports to the department of commerce from 27 manufacturers. Consumption is calculated from sales by manufacturers and consumption by companies which use their own production.

1925	Total apparent consumption	Sales by manufacturers	Consumption by producers
January	5,683,182	4,620,814	1,062,368
February	5,164,619	4,103,340	1,061,279
March	5,644,288	4,395,901	1,248,387
April	5,126,415	3,928,135	1,198,280
May	5,081,667	4,189,557	892,110
June	5,034,965	4,085,124	949,841
July	5,184,196	3,694,486	1,489,810
August	5,441,823	4,068,706	1,373,117
Totai (8 mos.)	42,361,155	33,085,963	9,275,192

Jobber Demand at September Rate

Mill Betterment Helps Warehouses—Sheet Prices Weak

BUYING from iron and steel warehouses continues at the September rate. Few districts show material betterment. Sheets continue the weak spot in the price situation.

Weakness in sheets again is noted in the New York market. Black sheets are holding at 3.90c to 4.35c; galvanized at 4.90c to 5.35c and blue annealed around 3.89c. A week ago an improvement was noted in galvanized sheets, but this has disappeared. Trading is at the September rate.

Jobbers in the Pittsburgh area are exceedingly busy putting out more tonnage now than at any time since the spring of the year. The recent decline in the mill price on cold-finished bars of $2 per ton has not been duplicated in the warehouse quotations.

With mill service dropping gradually at Buffalo warehouses are getting a good run of small orders. Total sales volume shows a steady upward trend now in its fifth month. Prices are steady and unchanged.

Warehouse business at Cincinnati continues on a par with recent weeks. Orders favor structurals and bars and as a result of the large volume of business booked by jobbers, prices are firmer and tend to move to higher levels. Indications are that October is likely to turn in a banner volume of business for the year.

St. Louis warehouses demand continues satisfactory, with the only change as contrasted with the preceding few weeks being the usual seasonal improvement in purchases of the general manufacturing trade.

Jobbers at Philadelphia reduced cold finished steel $2 a ton, effective Oct. 5. This makes flats and squares 4.40c, rounds and hexagons 3.90c. Bar shading mentioned several weeks ago now is in less evidence, and 3.20c generally is firm. The volume of business is good.

Bookings by Cleveland warehousemen are above the September rate, which exceeded August. Prices show little change, some shading still being evident.

Reports from Detroit warehouse operators indicate that the tonnage of warehouse products moved in September exceeded that of August.

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles	3.15c
New York	3.24c
Philadelphia	3.20c
Pittsburgh	2.90c
Portland	2.85c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.90c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	3.20c
St. Louis	3.25c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago	2.60c
Cincinnati	3.30c
Cleveland	2.85c to 3.10c
Detroit	3.15c
Los Angeles, C. L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	2.90c to 3.20c
Pittsburgh	2.10c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L	3.80c
Seattle	3.50c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.20c
Detroit	3.25c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.80c to 3.20c
Pittsburgh	3.00c
Portland	2.85c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.20c
Cleveland, 3/16-inch	3.425c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.80c to 3.20c
Philadelphia, 3/16-inch	3.00c to 3.40c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	3.80c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.00c
Detroit	3.65c
Los Angeles	3.70c
New York	3.89c
Philadelphia	3.35c
Portland	4.25c
San Francisco	3.70c
Seattle	4.25c
St. Louis	3.60c
St. Paul	3.75c

NO. 28 BLACK SHEETS

Boston	4.95c
Buffalo	4.40c
Chicago	4.00c
Cincinnati	4.55c
Cleveland	3.80c
Detroit	4.25c
Los Angeles	4.65c
New York	3.90c to 4.35c
Philadelphia	4.35c
Portland	5.25c
San Francisco	4.65c
Seattle	5.25c
St. Louis	4.50c
St. Paul	4.25c

NO. 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	5.45c
Chicago	5.00c
Cincinnati	5.65c
Cleveland	4.95c
Detroit	5.25c
Los Angeles (corr. 26 ga.)	5.75c
New York	4.90c to 5.35c
Philadelphia	5.45c
Portland	5.75c
San Francisco	5.75c
Seattle	6.25c
St. Louis	5.50c
St. Paul	5.25c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.85c
Detroit	3.80c
Los Angeles	4.25c
New York	3.99c
Philadelphia	3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.85c
Detroit	4.30c
New York	4.49c
Philadelphia	4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	3.95c	4.45c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.80c	4.30c
Detroit	3.75c	4.25c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	3.90c	4.40c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	3.75c*	.....
Seattle	4.75c*	.....
St. Paul	4.05c*	.....

*Rounds only.

COLD ROLLED STRIP

Boston, .100 inch, 500 lb. lots	6.15c
Buffalo	6.65c
Chicago	7.15c
Cincinnati	7.15c
Cleveland, over 500 pound lots	5.95c
Detroit	6.05c
New York	6.10c
Philadelphia	6.10c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL
New York, duty paid

Swedish hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE
Discounts from warehouse, New York City
Standard Steel Pipe
WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—23	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6 inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
⅛ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 9
3 to 6-inch lap	—11	+ 6
7 to 12-inch lap	— 8	+16

Best Safety "Kinks" Described

Convention in Cleveland Develops "New Ideas" in Methods and Appliances—Many Speakers Representing Iron and Steel Industry Participate in National Council's Meeting—Large Exhibit a Feature

MORE safety "kinks" and "wrinkles" applying to the iron and steel industry, more illustrations and descriptions of safety devices, and more close-up, analytical information was presented at the fourteenth congress of the National Safety council last week than at any of the other meetings in recent years.

It was evident to an observer of the last five congresses that practical demonstration is becoming the keynote with respect to safety measures in the iron and steel industry. Instead of dwelling on the need for co-operation, education and training, the papers and discussions at Cleveland took the form of presenting new ideas for safety campaigns and safety appliances, and descriptions of what is being accomplished by safety engineers, and how it is done.

Several illustrated talks of this character, and two sessions devoted to developing novel and successful methods for sustaining and promoting interest in safe practices were the features of the congress, pertaining to this industry.

As usual the council had for its general meetings some notable speakers, and it is estimated 5000 persons attended, as reported in last week's issue of IRON TRADE REVIEW. The program listed 450 speakers, not including scores who participated in discussions following the presentation of papers; and 87 sessions in which one or more of the 31 sections of the council were interested. The exhibit of safety devices was larger and more diverse than a year ago.

Metals Industries' Achievements Summed Up

RESOLUTIONS adopted by the National Safety Council state that of the 85,000 fatal accidents in the United States last year 23,000 occurred in shops, factories and industrial plants. Employers are urged to adopt the policy that "safety is just as essentially a part of plant operation as the turning out of products."

Industrial safety cannot be generally and permanently established in shops, plants and factories, it is stated, "until the great majority of employers devote the necessary time to the entire accident prevention problem, which embraces their employes also when at home and in public places."

The "Record of Achievement in the Metal Industries" was presented in a paper by Dr. L. W. Chaney, bureau of labor statistics, at the session of the metals section Wednesday morning. Since 1913 he has tabulated accidents in iron and steel plants, including approximately 50 per cent of the personnel in the industry. The entire group shows the following accident frequencies per 1,000,000 hours exposure; 1913, 60.3; 1916, 28,8; 1923, 12.7; 1924, 10.2.

"The section under consideration is typical of the whole industry in having all possible forms of iron and steel production," he said. "The figures show a reduction of 89 per cent during the period.

"Over a period including the great war the various departments with almost absolute steadiness have reduced the frequency of their accidents.

"It was also possible to classify accidents annually by causes. The frequency of machinery accidents in 1913 was 7.3; in 1918, 4.0; in 1924, 2.3. The frequency of accidents due to hot substances in 1913 was 5.4; 1918, 3.0; 1924, 0.87. Falls of person 1913, 4.5; 1918, 2.8; 1924, 1.4. Handling tools and objects 1913, 26.-7; 1918, 12.8; 1924, 3.9.

"Here again," he continued, "we have remarkable constancy in the rate drop from year to year. Clearly the influence making for lessened hazard is a pervasive one affecting all the various causes. Critical comparison will show that the different types of causes are not influenced in the same manner or the same degree but all are influenced in the same direction.

"Attention has been called to the fact that the plants so far included in the survey constitute about 50 per cent of the industry. In 1923 the frequency of accident for the group referred to was 10.22, that for the entire industry 33. A simple calculation shows that in that year the rate of the less successful half of the industry must have been in the neighborhood of 56.

"This is a somewhat startling condition to prevail. It means that a considerable portion of the iron and steel industry is not taking the safety movement as seriously as it deserves to be taken.

"To show what has been happening in the industry as a whole, and its several departments, the accident frequency for the year 1910 is contrasted with 1923, and two five year periods 1910-14 and 1915-19 also are compared:

	1910	1923	1910-14	1915-19
Iron and steel industry	74.7	33.2	59.2	41.6
Blast furnaces	87.9	31.7	62.3	39.0
Open hearths	106.4	30.2	75.0	50.5
Foundries	53.2	63.2	63.6	61.0
Heavy rolling	79.2	18.6	46.1	32.4
Bessemer	130.2	21.5	89.8	57.7
Plate mills	64.5	26.4	49.9	39.2
Sheet mills	61.0	28.5	51.1	32.7
Tube mills	55.9	18.2	40.5	22.4
Wire drawing	77.6	21.9	65.7	45.8
Electrical	62.7	17.6	47.1	40.3
Mechanical	56.4	19.4	62.7	41.3
Yards	44.8	29.4	50.8	37.5

Many leaders in the safety movement in the iron and steel industry participated in the council's program. At the session of the metals section Wednesday morning J. A. Hughes, Carnegie Steel Co., described the method for transporting steel products safely at the Duquesne works, where he is superintendent of transportation and labor. The safety committee there comprises the superintendent, general foremen, foremen, brakemen and conductors. They serve four months and meet every two weeks. This system provides for encouragement and watchfulness.

All of the foremen and yardmasters speak to their men regarding safety before starting work each day. All tools are carefully inspected, and safety devices are used wherever there is a hazard. The men are observed closely, and they are not permitted to work if there is any suggestion they used intoxicating liquor.

"The term foremen or boss should be eliminated," said Mr. Hughes. "The title should be educators; at our plant they are educators."

Discussion developed the fact many companies are using metal flags instead of cloth for signaling on their yard tracks. R. E. Shaw, Ford Motor Co., Detroit, said his company is doing this, and representatives of the Bethlehem Steel Corp., and Commonwealth Steel Co., also reported similar action at their plants.

C. M. Brady, Wisconsin Steel Co., South Chicago, J. A. Ward, American Car & Foundry Co., A. Bernquist, Youngstown Sheet & Tube Co., East Chicago, and H. J. Spoerer, safety manager for the company at Evanston, Ill., were among those who participated in the discussion of railroad safety methods.

W. J. Hanford, National Malleable & Steel Casting Co., Cleveland, started the series of "safety kinks" when he said that in the inspection of crane cables at his plant two bits of white waste are held against the cables. The slightest splinter in a cable will pull out some of the waste, when the cable is in motion. He said that accidents due to burns have been practically eliminated from the company's foundry through means of a card system. Each man's name must be signed to a card each day showing that he has been properly provided with safety shoes, leggins and clothing.

E. H. Ballard, general foundry and pattern shop superintendent, River works, General Electric Co., West Lynn, Mass., read a paper on "The Safe Handling of Molten Metal in the Foundry." This paper is presented in full elsewhere in this issue.

The part that radicals play in disturbing industrial organization was mentioned by some speakers. J. M. Woltz, Youngstown Sheet & Tube Co., Youngstown, said that "red" propaganda has been carried on in American industries by means of funds supplied from Moscow.

Successful Safety Ideas for the Plant Outlined

A series of short talks on "The Best Safety Kink I Have Known" was a feature of the round table discussions Wednesday afternoon. The principal speakers were E. G. Quesnel, safety engineer, Commonwealth Steel Co., Granite City, Ill.; R. G. Adair, supervisor of safety, American Rolling Mill Co., Middletown, O., K. M. Bradley, River works, General Electric Co., West Lynn, Mass., and H. G. Hensel, safety director for the Youngstown Sheet & Tube Co. at Chicago.

Mr. Quesnel outlined the safety department as a form of communicating system, with the department acting as a transmitter of information and suggestions to the shop, and also as a receiver. He returned from the Louisville, Ky., national safety congress a year ago thinking of a statement made there that colored employes are a difficult class to interest in safety. As his company employs 600 or more of them he called them all together and told them what he had heard, putting it up to them as a challenge. The result was that the colored employes organized and attained a remarkable safety record.

An illustration of the safety department as a receiver was outlined by Mr. Quesnel in giving another safety "kink."

He said millions of nails are used in making cores and molds in the foundry, and nail accidents were frequent. A checker made the suggestion that blunt nails be used, and the safety department adopted the suggestion. All nails now used in the core room and foundry are blunt, and nail accidents have been eliminated since their use.

Mr. Bradley, of the General Electric, exhibited a map of the company's properties, with colored pins placed thereon to show location and character of accidents. This led employes to be watchful.

Mr. Hensel, Youngstown Sheet & Tube Co., said that foremen were assisted in presenting safety lessons to employes as an effective means of obtaining the co-operation of both. At first the safety department gave the foremen ideas and notes on which to speak. "In a few weeks they were prepared to speak without such notes," he said. "They were not afraid to get on their feet and tell the men in their own language what safety meant to them." The company also has found that the use of safety locks and tags on electric switches and at gas valves are important.

The American Rolling Mill Co. urged foremen to present the cause of safety to their workmen, but to make certain that every man had an opportunity to learn the meaning of safety it made full use of the plant bulletin boards for placards. Mr. Adair also described briefly the company's first-aid training methods.

The symposium at the same session on the subject "Creating and Sustaining Interest in Safety" also developed a number of safety suggestions. All speakers emphasized the need of obtaining the foreman's assistance in safety work.

"He should be responsible to both the management and the workers for all accidents occurring in his department," said H. D. Herron, chief safety inspector, International Harvester Co., Chicago.

Early this year at one of the Harvester plants a prize was offered for a safety symbol. The winning device was a life size picture of "Kit." "Kit" is a small red mule, in service at the plant for 15 years. A picture of "Kit" was divided in 12 sections, representing departments, and each section was subdivided representing months. If a department scored "no accidents" for a month the strip on the mule's picture was painted red; and if there was an accident, then black. The whole plant is working to reproduce "Kit" in red.

At one of the Harvester company's

Where Safety Begins

INDUSTRY can no longer be satisfied to work within the gates of its own plant. Industry has responsibilities outside of the plant which are just as great as within. It must take a vital interest in such institutions and organizations which have for their objective character building and showing to the individual the responsibilities of life.

We must take an active part in such organizations as are constantly endeavoring to counteract movements which are aiming to destroy the institutions which we hold sacred.

We may have safety devices in the interest of the physical being of man; we may have safety devices to protect him from physical harm—from the loss of life and limb, but there is a greater safety campaign needed today than that of saving life and limb, and that is the safety of the mind. Safe thinking, constructive thinking, and right viewpoint on the possibilities of life; a vision of the better and bigger things, can only be brought about through a conscientious, sincere and honest campaign of education.—PHILLIP STREMMEL, *general superintendent, National Enameling & Stamping Co., Granite City, Ill., in address to National Safety council.*

wagon works a wheel was adopted as a symbol. The wheel has 12 spokes, one for each month. If an accident occurs in the plant then a broken spoke is placed in the wheel. A sound wheel was the record for 1924. Now the employes are working for three more like it, the required number for a wagon. The 1925 wheel thus far is sound.

Still another "kink" was described by Mr. Herron. This refers to a flag 3 x 6 feet, floating over one of the company's plants. If an accident occurs, next day the flag is lowered, while if there is no accident the flag remains aloft. At the base of the flag pole is a scoreboard record of safety days and accident days. Every employe looks for the flag on arriving at the plant, the speaker said.

J. A. Voss, safety director, Central Steel Co., Massillon, O., said "the safety man should consider himself first a safety manager and then an advertising manager." Manufacturing companies must advertise safety to employes, with the same spirit and persistence they show in advertising their products. He placed the responsibility for flagging interest in safety work on the safety manager; unless the manager is alert and has new ideas, interest will wane.

As described by one speaker, the Wheeling Steel Corp. uses a system of flashing green or red lights. If an accident occurs the red light flashes during the next day in that department. The record is persistently before the men.

Following the election of officers at the Wednesday morning session of the automotive section, W. F. Dittmer, supervisor of safety, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., spoke on the "Hazards of Punch Press Departments Other Than Machine Hazards." After describing in a general way the press room equipment of his company, the speaker pointed out that 80 per cent of all accidents, which occurred in this department, were away from the presses. About 75 per cent of the accidents during the last seven years in the press room, he continued, were due to handling material.

Numerous accidents have resulted from employes bumping into objects, Mr. Dittmer said, particularly piles of sheets, resulting in cut hands. The speaker explained that the sheets in mill lengths are handled on skid boards with the ends extending about 4 inches on each side of the pile to permit a hook-on of chains extending from the crane. At each corner of the pile of sheet steel have been placed steel angles mounted on a base and extending about 4½ feet high. These fit tightly against the sharp corners and protect the workman from injury.

Lantern slides showed the type of shears used by the company in preparing stock for the pressing department. The stock is cut by guillotine squaring shears. The cut sections on the rear side of the shear are stacked automatically and when sufficient pieces have accumulated the batch is moved over rollers to a transfer truck which operates on a narrow gage track. The speaker emphasized the importance of keeping the shear knives sharp to avoid burrs and, consequently, hazards to the shear operator. The holddown device on each shear is equipped with a guard made of a steel angle.

All hand trucks operated in the press department of the Westinghouse company are equipped with a device for holding the handle in an upright position when not in use. This, the speaker stated, has entirely eliminated tripping accidents. In concluding Mr. Dittmer stressed the importance of having the pressing department well lighted, of making regular inspections of overhead apparatus, having aisleways laid out in proper widths and of not permitting the accumulation of scrap. Following the discussion of this paper slides of miscellaneous presses installed at various plants in this country and equipped with safety appliances were shown on the screen.

Officers Elected

NATIONAL SAFETY COUNCIL

President

Charles B. Scott, Chicago, Bureau of Safety of Chicago.

Vice Presidents

Charles E. Hill, general safety agent, New York Central lines, New York.
A. W. Whitney, National Bureau of Casualty and Surety Underwriters, New York.
David VanSchaack, Aetna Life Insurance Co., Hartford, Conn.
Lew R. Palmer, Equitable Life Assurance Society, New York.
Major Henry A. Reninger, Lehigh Portland Cement Co., Allentown, Pa.
C. B. Auel, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
C. E. Pettibone, American Mutual Liability Insurance Co., Boston.

Treasurer

Harry E. Webber, Illinois Bell Telephone Co., Chicago.

Managing Director

Wm. H. Cameron, Chicago.

METALS SECTION

Chairman

A. C. Gibson, Spang-Chalfant Co., Inc., Pittsburgh.

Vice Chairman

F. G. Bennett, Buckeye Steel Casting Co., Columbus, O.

Secretary

J. A. Northwood, Bethlehem Steel Co., Johnstown, Pa.

Executive Committee

T. H. McKenney, Illinois Steel Co., South Chicago.
H. G. Hensel, Youngstown Sheet & Tube Co., Chicago.
John A. Oartel, Carnegie Steel Co., Pittsburgh.
And the chairman, vice chairman and secretary.

AMERICAN SOCIETY OF SAFETY ENGINEERS, ENGINEERING SECTION

Chairman

G. E. Sanford, General Electric Co., Schenectady, N. Y.

First Vice Chairman

R. U. Stratton, Travelers Insurance Co., New York.

Second Vice Chairman

E. W. Beck, U. S. Rubber Co., New York.

Secretary

W. D. Keefer, industrial division, National Safety council, Chicago.

AUTOMOTIVE SECTION

Chairman

G. A. Kuechenmeister, Dominion Forge & Stamping Co., Walkerville, Ont.

Vice chairman in charge of program

T. O. Meissner, American Can Co., Maywood, Ill.

Vice chairman in charge of power presses

A. F. Dunnebacke, Olds Motor Works, Lansing, Mich.

Secretary

A. M. Williams, Chrysler Corp., Detroit.

New Steel Plant Safety Devices Are Illustrated

LANTERN slides of charts and photographs showing the classification of accident causes in plants of the United States Steel Corp., were exhibited at the A. B. C. session of the council Thursday. The chairman of the meeting was Stephen W. Tener, manager, accident and pension department of the American Steel & Wire Co., Cleveland, and slides were exhibited by John A. Oartel, chief of the safety bureau of the Carnegie Steel Co., Pittsburgh. Through safeguarding and the development of an organization, Mr. Oartel said, accidents have been reduced 25 to 50 per cent.

One chart exhibited classifies 284,494 accidents according to cause. Nearly 44 per cent of these accidents were due to hand labor which cannot be safeguarded in any way. To eliminate this class of accidents, education must be relied on entirely.

About 60 per cent of burns are due to hot metal, flue dust and flames. About 20 per cent are due to steam, hot water and acids, and the remaining 10 per cent to electrical flashes.

About 60 per cent of all falls in steel mills occur through slipping or tripping on the ground level.

About 60 per cent of the accidents at machinery are due to men being caught or struck by machinery, 20 to 25 per cent due to men being struck by material and the remainder by machinery breaking.

The five major causes of railroad

accidents in steel mills are: Falling from engine; struck by car or engine; working on cars; loading and unloading cars; coupling and uncoupling cars.

The chief cause of accidents in the hand-labor class are: Being struck by falling material; sledge hammer accidents; being caught between material; accidents due to contact with slivers and sharp edges, and men running into something; and, strains and sprains.

All others are divided into crane accidents which comprise about 40 per cent; falling material; chips; nails and cramps.

The exhibit included photographic lantern slides of safety rallies and trophies in the steel corporation's plants.

Companies Show Devices

Another attractive feature was introduced by Mr. Oartel at the session of the metals section Thursday morning. This was a collection of lantern slides showing the latest developments in safety devices for steel mills, made from photographs contributed by various companies, among them being the General Electric Co., Commonwealth Steel Co., Locomotive Stoker Co., Central Steel Co., Bethlehem Steel Corp., American Rolling Mill Co. and the Carnegie Steel Co.

The exhibits, accompanied with oral description, included a guard for industrial trucks; automatic stop for large multiple spindle drill, having a counterweight head; portable oxyhydrogen outfit; special tool rest to prevent grinding on the side of the wheel; cutter guards for milling machines; sling for handling barrels; special guard for sawing metal and fibre tubing; blunt nails for preventing nail accidents in making cores; guard for covering facing heads on horizontal boring mills; charging buggy car and step; portable distillate tank and torch for foundry use; mechanical closing device for end of chute; automatic self-set brake on rolling ladders; red electric warning lights; canvas safety belt; bridge builder's belt; safety railing for open-hearth tapping platform; passenger type locomotive platform; canopy over platform in open-hearth department; open-hearth tapping hole stopper and extractor; narrow gage wrecking car—and "the best safety device discovered or invented to date," a careful workman.

Further specific reference to reduction of plant accidents was given in a paper by George Hodge, assistant manager, industrial relations department, International Harvester Co., Chicago. He described the safety department organization of "a corporation employing normally 40,000, and representing a cross section of industry, coal and iron mines, mills, railroads, manufacturing plants, and the like."

Comparing the record so far this year with the average for the last three years, the following was shown; two plants with an improvement of 100 per cent; six with 90 to 100 per cent improvement; five with 70 to 90 per cent; three with 50 to 70 per cent; six with 10 to 50 per cent and six, no improvement. The foregoing is on a basis of lost time accidents. On a basis of severity, or number of days lost per 1000 hours worked, the following represents the composite result: 1923, 3.0; 1924, 2.5 and nine months of 1925 1.4.

A number of committees read reports of proceedings at the meeting of the engineering section of the American Society of Safety Engineers, Wednesday. S. E. Whiting, Liberty Mutual Insurance Co., Boston, urged on behalf of the electrical committee that closer co-operation be given his body in reporting cases and investigations surrounding low voltage accidents. The committee on static electricity, through Chairman W. S. Paine, Aetna Life Insurance Co., Hartford, Conn., presented interesting findings on investigations governing the cause of automobile fires through static electrical causes. For the committee on promotion of safety education in engineering colleges, R. McA. Keown, Wisconsin industrial commission, Madison, Wis., stated that there are two ways to avoid accidents, namely, through the use of safeguards and through engineering revisions. His committee is working chiefly in the latter direction.

Resolutions Adopted

A paper introduced by H. W. Mowery, American Abrasive Metals Co., New York, for the committee investigating the elimination of excess noise, discussed the relation of mental depression and discord caused by excess noise to the worker's nervous system, and fatigue.

Two resolutions were adopted. One covered better industrial lighting principles similar to those sponsored by the National Electric Light association. The other, proposed by J. I. Bannash, Chicago, favors the adoption by the engineering section of the standard American screw thread for all makes of fire hose.

Many Industrial Safeguards Feature Exhibition

NOTABLE for the safety accessories and equipment designed to eliminate accidents, the exhibit of safety appliances, devices and equipment held at the Winton hotel in connection with the annual meeting of the National Safety council gave a representative picture of what manufacturers are doing for industrial safety. A number of companies exhibited the latest type of safety clothing. Among articles in this line was a special hood for paint spraying shown by the Pulmosan Safety Equipment Co., Brooklyn. An interesting exhibit at the booth of the Mine Safety Appliance Co., Pittsburgh, included gas detectors, resuscitation devices, and various masks used in mine rescue work. Asbestos cloth garments for all uses were shown by the Holcomb Safety Garment Co., Chicago.

Industrial equipment and safeguards played a large part in the exhibit. The Fisher Equipment Co., Chicago, showed a new device, a foot brake on a hand truck, enabling one man to load and operate the truck without danger of the truck skidding. A special safety saw guard and quick acting valves were displayed at the booth of the Helios Mfg. Co., Buffalo. The Surety Mfg. Co., Inc., Chicago, showed a variety of machine guards made of special expanded metal. Industrial visitors were interested in the new folding ladders on exhibition at the booth of the Dayton Safety Ladder Co., Dayton, O. The Buda Co., Harvey, Ill., showed its electric gate equipment designed for use at railroad crossings.

Optical displays constituted an important part of the exhibit. A great number of automatic traffic lights and controls were shown in the booth of the Essco Mfg. Co., Peoria, Ill. The National Lamp Works of the General Electric Co. illustrated by optical illusions that correct illumination will reduce industrial accidents. A great variety of safety slogans, cautions and parables decorated most of the booths, warning that "Cats Have Nine Lives and Can Take Chances—You Can't," and the like.

First aid equipment and devices also were prominently displayed at the safety show. The Robinson Kit Co.,

Portland, Me., showed an unusually complete sanitary kit made especially for industrial plants. An X-ray equipment displayed by the Victor X-Ray Corp., Chicago, was operated and demonstrated its value in medical treatment following accidents.

Wholesale Price Average Higher in August

Washington, Oct. 6.—A slight rise in the general level of wholesale prices of commodities is found by the bureau of labor statistics of the United States department of labor as a result of information gathered in the leading markets of the country.

Small increases were recorded in the metals and metal products group, building materials, cloths and clothing and chemicals and drugs. The index number of the metal group advanced from 126.4 in July to 127.3 in August. The bureau's weighted index number, which includes 404 commodities or price series, shows that the general level of wholesale prices advanced to 160.4 for August, from 159.9 for the preceding month.

An advance was made by farm products, due to rising prices of rye, wheat, cattle, hay, hides and tobacco. Foods also averaged higher, with increases for meats, butter, coffee and flour. Fuel and lighting materials, notwithstanding slight increases for anthracite and bituminous coal, averaged lower than in July, due to pronounced declines in prices of gasoline and crude petroleum. In the group of miscellaneous commodities, the sharp drop in rubber prices caused the index number to recede almost 4 per cent. Of the 404 commodities increases were shown for August in 141 cases and decreases in 179. In 184 instances no change in price was reported.

The general level increased 7 per cent as compared with August a year ago. Metals and housefurnishing goods alone were somewhat cheaper than a year ago.

French Iron Output Holds Steady

Washington, Oct. 6.—French production of pig iron continued in August at a rate similar to July, the total August output being 724,164 metric tons, it is reported in cable dispatches to the department of commerce from Paris. Exportation continued on a big scale, these cables add.

The allotments for individual plants for September were reduced to 35,000 tons for phosphorus pig delivered on the domestic market. This was not due to lessened demand but to the fact that some plants apparently could not attain maximum activity assigned them because foundries gave preferences to certain suppliers.

Renewal of the entente, says these reports, between French producers of phosphorus pig iron has been definitely concluded, and the entente with regard to prices and production quotas for hematite pig iron and spiegeleisen has been accomplished, although still not signed. The latter agreement will go into effect Oct. 1, the delivered prices varying from 440 to 475 francs per metric ton, according to the region and the quality. An active trade in semifinished steel and heavy shapes is reported, but activity is much less pronounced in other lines of rolled merchant products. Orders for reinforcing steel have been good, however.

Formation of an agreement for rolled products has not been decided upon definitely, largely because of difficulties encountered by the diversity of these products and by scattered locations of plants. Discussions concerning such an agreement, however, are continuing. An entente for marketing beams likely is to be established also.

Hungary's Ironworks on Commercial Basis

Washington, Oct. 6.—The Hungarian State ironworks are to be converted into a commercial enterprise in accordance with a recent decree, says Assistant Trade Commissioner Elwood A. Welden, Vienna, in a report to the department of commerce. Formerly the ironworks consisted of three separate concerns, but will now be united under the name of Royal Hungarian State Iron, Steel, and Machine Works. The concern, which must carry on its work in the same manner as a private corporation, will be considered as an independent legal entity. The state will be the exclusive owner.

The enterprise guarantees loans granted by the state for the purpose of investment, as well as interest and amortization on former advances, and furthermore, all pensions are to be provided by it in case this can not be covered by the state pension bureau itself. The government is to grant a loan to the enterprises for working and reserve capital until a financial balance has been attained. After July 1, 1926, the budget of the enterprise must provide 1 per cent of its gross income for the increase of working caiptal, and this is to be continued until 30 per cent of the average expenses of the preceding five years has been reached.

New Quota Law Causes Net Loss of Labor

New York, Oct. 6.—The new immigration law has not only effectively stemmed the influx of aliens into the United States, as was intended, but appears to have done so in excess of all expectations during the first year of its enforcement, according to an analysis of immigration statistics for 1924-25 made by the National Industrial Conference board, New York. Net immigration during the fiscal year 1924-25 was less than a third, or 32 per cent of what it was during the year before.

Not only have a number of countries fallen far short of the quota allowed them, but the net gain of immigration has been considerably reduced by heavy emigration of aliens. In the case of Italy, for instance, 20,948 more nationals of that country left the United States than entered it during the fiscal year 1924-25. Italy fell 10 per cent short of filling her quota of less than 4000 per year.

Common labor, such as is used in industry, is the class of persons principally affected by the new conditions accompanying the enforcement of the 2 per cent quota act. Owing to the curtailed immigration and the numerous departures of unskilled laborers, a net loss of 15,106 of this class was sustained during the year, as against a net gain of 70,742 in the year 1923-24.

Total immigration amounted to 294,314 for the year ending June 30, 1925, as compared with 706,896 during the preceding year, before the 2 per cent quota went into effect.

Fights Spotting Charge

Pittsburgh, Oct. 6.—Examiner David F. Copenhafer of the interstate commerce commission, Washington, heard testimony Sept. 29 at the Chamber of Commerce rooms on the second hearing of the complaint filed with the commission by the Carnegie Steel Co. against the Pennsylvania railroad. The steel company contends a charge of 3 cents per ton, known as a "spotting charge", was made on shipments of ore from the company's Youngstown plant to the unloading point, whereas certain competing steel manufacturers in the district were not assessed this charge. The case was originally decided in favor of the complainant, but was reopened on petition of the defendants.

Set Dates for Western Freight Rate Case

Chicago, Oct. 6.—Beginning Oct. 26, opponents of the petition of western railroads for a 5 per cent advance in freight rates will present their case here and cross examine witnesses for the railroads who held sway from Sept. 8 to 18. Subsequently, hearings will be held in other western cities, including St. Paul beginning Nov. 9, Denver Nov. 16, San Francisco Nov. 24, Dallas, Tex., Dec. 2, and Kansas City Dec. 14. Final arguments will be heard by the full interstate commerce commission in Washington, probably in January.

At the proceeding here before Chairman Aitchison of the commission, the carriers presented a strong case. While the failure of the western roads to earn more than 4 per cent is a crucial point, opponents will stress the inability of agriculture and industry to stand higher freight costs. The brunt of the opposition will be borne by the agricultural interests, who will contend that an increase would lessen the farmer's return on what he sells and increase the cost of what he buys, thereby leading to an even further reduced movement of freight.

Few predict any change in western rates within 10 months and the most general prediction is a year. The president of one western road states he looks for the increase to be effective next May. To the steel industry here the pending revision of Illinois rates as a result of the recent Jones & Laughlin decision is of more immediate importance, Committees of the railroads and shippers are now meeting to work out the new tariffs.

The traffic manager of a steel interest here states he will not actively oppose the 5 per cent advance. The maintenance of present relationships is more important than the actual level of rates, he contends.

Belgian Steel Wins World Markets

Washington, Oct. 6.—An analysis of the prominence of Belgian steel in the markets of the world has been prepared by G. E. Phoebus of the iron and steel division of the department of commerce. Complaints of increasingly keen competition from Belgian steel plants are part of the reports of rival iron and steel producing countries, the Phoebus report states.

"A survey of the countries of destination for the various iron and steel products shipped abroad from ing the first quarter of 1925 shows the Economic Union of Belgium and Luxemburg," says this report, "durthat Great Britain received nearly 40 per cent of the total exportation. In addition to other items, British consumers drew heavily upon Belgium for pig iron (15,187 tons), rough sheets, corrugated or punched at right angles (15,941 tons), and rails (7785 tons).

"Some of the exports to the United States included 5631 tons of pig iron, 5388 tons of rails, 488 tons of fishplates, and 110 tons of nails, tacks, clamps, etc. Among the outstanding receipts of Argentina were 5361 tons of rough sheets, corrugated or punched at right angles, 4546 tons of plain wire and wire rods, and more than 2000 tons of rails. Brazil accounted for fairly large consignments of rails, sheets, and wire and wire rods.

"Other important shipments for the period included 6351 tons of scrap, 3589 tons of pig iron, 2634 tons of rails and 1582 tons of hoops to Germany; 3550 tons of sheets and 1348 tons of pig iron to the Netherlands; 8355 tons of sheets to France; 4500 tons of rails and 2085 tons of sheets to Japan; 2958 tons of sheets and 1035 tons of rails, tacks, clamps, etc., to China; and 9985 tons of sheets, 909 tons of nails, tacks and clamps, and 900 tons of hoops to British India."

Slight Gain Is Reported in Work and Wages

Washington, Oct. 6.—Manufacturing industries of the country gained slightly in the number of employes on payrolls in August, it is disclosed in a preliminary report of 9021 manufacturing establishments in 52 industries by the United States department of labor. The survey shows that employment was eight-tenths of 1 per cent larger than in July, and that aggregate earnings of employes increased 1.8 per cent. Per capital earnings gained nearly 1 per cent.

The agricultural implement group shows an increase of nearly 6 per cent in employment. The reduction in employment in the machine tool industry was among the largest reported. The stove industry recouped some of its severe July losses.

A wage rate decrease of 10 per cent, affecting about 16,000 employes, was reported by 43 establishments of the woolen goods industry in New England and Middle Atlantic states.

During August, per capita earnings of employes increased in 37 of the 52 industries considered. An average of 94 per cent of full time employment was reported by more than 7000 individual establishments. These same concerns also reported an average of 85 per cent of a full normal force of employes.

The volume of employment in August was 8.4 per cent greater than in August a year ago, while payroll total gained 12.4 per cent.

There was an absence of an extreme decline in employment in industry as a whole during July when compared with June, 1925, according to the monthly study of employment, wages and hours by the National Industrial Conference board. Employment decreased 2 per cent in July, but this is less significant than at any other time of the year in view of growing tendency of plants to close for brief period during summer for vacations and repairs. Status of employment by industry in July of this year, as compared with June, 1925, and July, 1924, is given below:

Indexes of employment as compared with 100 for June, 1920

Industry	June 1925	July 1925	July 1924
Agricultural implements	63.5	62.8	48.1
Automobiles	72.4	71.8	53.1
Boot and shoe	99.7	101.2	94.3
Chemicals	76.0	75.6	65.4
Cotton—North	68.3	62.3	53.3
Cotton—South	114.7	113.9	100.0
Electrical Mfg.	87.3	83.4	85.2
Furniture	94.4	91.8	84.5
Hosiery and knit goods	113.2	109.8	115.8
Iron and steel	69.8	67.8	53.1
Leather tanning	77.0	78.2	77.6
Lumber and mill work	126.9	126.6	127.6
Meat packing	75.9	76.0	80.7
Paint and varnish	69.9	69.8	68.1
Paper and pulp	83.6	82.9	77.9
Paper products	86.0	85.7	88.8
Printing—book and job	89.3	92.2	90.2
Printing—new and magazine	111.5	111.1	110.7
Rubber	76.0	68.8	46.8
Silk	108.9	111.0	88.5
Wool	86.8	82.2	83.3
Foundry and machine shop	73.6	74.1	73.3
All industries	78.7	77.1	69.2

Protest Rate Charges

Birmingham, Ala., Oct. 6.—Looking to a reconstruction of southern freight rates, conference of iron and steel manufacturers of this territory was held in Birmingham Friday and Saturday of the past week. Protests have been prepared against proposed rates. With the exception of the recent ruling as to rates from Birmingham to Memphis, Southern manufacturers feel they are being treated unfairly by recent readjustments. The Memphis decision carries with a readjustment of rates from St. Louis and Louisville. Present rates, it is claimed, do not allow opportunity to southern producers to overcome water movements from Pittsburgh.

RecordNumberEmployed

Detroit, Oct. 6.—According to the last survey by the Employers' association covering two-thirds of all factory workers 250,595 men and women were employed here on Sept. 15. This indicates a total of approximately 377,000 workers for all the factories which is the greatest employment total this city has ever experienced.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

FREIDAG MFG. CO., Freeport, Ill., William Freidag, president, manufacturer of foundry specialties, has just completed a foundry addition 70x120 feet and has started work on a second foundry addition 70x140 feet and a shipping and assembly building 40x160 feet. Plans are being made for a new machine shop building next year to make possible delivery of finished castings to its patrons. These additions will constitute doubling capacity of the plant.

* * *

WILSON FOUNDRY & MACHINE CO., Pontiac, Mich., D. R. Wilson vice president, announces closing a contract for 15,000 automobile engines for the Federal Motor Truck Co., Detroit.

* * *

SIMPSON FOUNDRY & ENGINEERING CO., Newark, O., suffered severe loss by fire last week, which razed its building. Lack of water pressure made it impossible to fight the flames.

* * *

FOOTE BROS. GEAR & MACHINE CO., Chicago, has bought from the Farrell Foundry & Machine Co., Buffalo, N. Y., a skyes gear generating machine to produce continuous tooth herring bone gears for a new series of reduction units.

* * *

TUCKER FOUNDRY CO., Medina, N. Y., recently formed to take over the plant of the Central Foundry Co., has been organized with Albert H. Tucker president, Floyd W. Austin vice president, Inez B. Reynolds secretary and treasurer and Albert Johnson, superintendent.

* * *

NATIONAL AMMONIA CO., St. Louis, announces it has associated itself with the firm of E. I. du Pont de Nemours & Co. in the building of a plant near Charleston, W. Va., to produce ammonia synthetically. The products will be marketed by this company along present lines.

* * *

NEWAGO ENGINEERING CO., Newago, Mich., has taken contracts for installation of sand handling equipment for the Lakey Foundry Co. and the West Michigan Steel Foundry Co., Muskegon, Mich., and the Holland Furnace Co., Holland, Mich.

* * *

MUSKEGON MOTOR SPECIALTIES CO., Muskegon, Mich., has completed reorganization which takes it out of the hands of a creditors' committee. It manufactures cam shafts for a number of important automobile manufacturers. Fred L. Flanders is president and treasurer, Wilson McLaughlin vice president and Harris E. Galpin secretary.

* * *

AMERICAN WOOD WORKING MACHINERY CO., Beloit, Wis., has been bought by the P. B. Yates Machine Co. of the same city and the combined companies will be known as the Yates-American Machine Co. J. E. McKelvey, president of the American company, will head the combination and P. B. Farrow, vice president of the Yates company will have the same position with the combined companies. A special meeting of stockholders of the Yates company has been called for Oct. 15 to act on changes in its stock to cover the absorption of the other company.

* * *

CHICAGO STEEL-SERVICE CO., Chicago, announces opening its warehouse at 3912 South Ashland avenue, for merchandising iron and steel products. Walter D. Monroe, president, has been identified with the warehouse business for 15 years, having been connected with Jos. T. Ryerson & Son, Inc., A. M. Castle & Co., and later vice president of Chamberlin Steel Co. William A. Stone, vice president and treasurer, formerly was secretary of Ingalls-Shepard .Co., Harvey, Ill., while G. L. Dunn, secretary, previously was connected with A. M. Castle & Co. and Chamberlin Steel Co.

* * *

AMERICAN Heat Economy Bureau, Inc., Pittsburgh, has recently sold burner installations to steel and iron companies as follows: Tonawanda Iron Corp., North Tonawanda, N. Y., for four stoves; Inland Steel Co., Indiana Harbor, Ind., for four stoves; Bethlehem Steel Co., Lackawanna, N. Y., for four stoves, the sixth repeat order; Otis Steel Co., Cleveland, third repeat order, consisting of outfits for four stoves, four 834-horsepower boilers, two 500-horsepower boilers and one 100-ton open-hearth furnace.

* * *

VALLEY mill of the Glasgow Iron Co., Pottstown, Pa., was severely damaged by fire recently, only the oil house and the boiler house escaping. The main mill building was 150 x 250 feet, of steel construction but the steel work buckled and fell. The mill was built in 1885 and after several years as a bar mill was converted to the rolling of skelp and since 1900 has produced steel specialties.

* * *

DUEBER-HAMPDEN WATCH CO., Canton, O., has been acquired by a syndicate of Cleveland men, including Fred K. Gatch of the Grasselli Chemical Co.; L. W. Wickham of Orgill, Maschke & Wickham, lawyers; A. M. Deuber, former owner of the company; G. M. Vretman, Walter Vretman and C. B. Williams. The business will be continued, with the addition of automobile dash clocks and vanity cases. The company was founded in Newport, Ky., 66 years ago by John C. Dueber, father of A. M. Dueber. About 40 years ago the Hampden Watch Co., Springfield, Mass., was merged with the Dueber works and the name was changed to the present style.

* * *

ETHOMANN, managing director of the Brown, Boveri & Co. of Switzerland, which recently organized the American Brown, Boveri Co. to take over the New York Shipbuilding Corp., has arrived in this country for an inspection of the New York Shipbuilding plant at Camden, N. J. He is accompanied by A. Buchli, executive director of the Swiss Locomotive Works. The plant at Camden is to be adapted immediately to the manufacture of electrical equipment under the Swiss company's patents. Lawrence R. Wilder, president of the Wilder Electric Trusts Ltd., New York, who negotiated the purchase of the New York Shipbuilding plant, is to be president of the American Brown, Boveri Co. Financing of the new company is expected to be done early in October.

Industrial Business Changes

TOOLS manufactured by the Cincinnati Planer Co., Cincinnati Bickford Tool Co., Cincinnati Milling Machine Co., Lodge & Shipley Machine Tool Co. and the Acme Machine Tool Co. have been placed in the hands of the following exclusive sales agents in the south: Woodward, Wight & Co., Ltd., New Orleans; Huey & Philip Hardware Co., Dallas, Tex.; Hausman-Harwick Machine Tool Co., Birmingham, Ala.; R. S. Armstrong Bro. & Co., Atlanta, Ga.

* * *

Federal Tool & Alloy Steel Corp., Brooklyn, N. Y., has changed its name to the Swedish Iron & Steel Corp.

* * *

Cleveland Graphite Bronze Co., Cleveland, has moved its offices from 2906 Chester avenue, to larger quarters at 880 East Seventy-second street.

* * *

S. W. Platt & Co., dealers in iron and steel scrap, McKees Rocks, Pa., has opened a sales office at 708 Oliver building, Pittsburgh.

* * *

W. H. Daub & Co., Alaska building, Seattle, has been appointed representative for the Koppel Sales Co. in the Pacific Northwest.

* * *

Brown Instrument Co., Philadelphia, has opened a branch office at 363 New High street, Los Angeles, in charge of S. F. Godfrey, formerly of the Braun Corp.

* * *

Reading Chain & Block Co., Reading, Pa., has opened a sales office at 90 West street, New York, in charge of R. E. Nelless.

* * *

Saginaw Malleable Iron Co., Saginaw, Mich., which merged with the Saginaw Products Co., that city, June 30, now is known as the Saginaw Products Co. malleable iron plant.

* * *

Bantam Ball Bearing Co., Bantam, Conn., has placed its Detroit office, 3780 Chicago boulevard, in charge of J. Harold Kraus Jr., who will handle the entire Michigan territory and Toledo, O.

* * *

Carle Machinery Co., Detroit, has been made representative for the D. H. Luehrs Co., Cleveland, manufacturer of automatic production machinery.

* * *

T. A. Bartlett Co., Chicago, has bought the plant of the Majestic Engine Co., Goshen, Ind., and will equip it for the manufacture of electric storage batteries and other electrical accessories.

* * *

Crotsly & Brown, ferroalloys, iron and steel, Chicago, have moved to new offices and warehouse at 33 South Desplaines street, where their full line will be carried.

* * *

Union Twist Drill Co., Athol, Mass., has appointed Motch & Merryweather, Cleveland, agents in that territory for its products, including hobs, grinders and other tools.

* * *

Robert W. Hunt Co., engineers, Chicago, has opened a branch office and cement laboratory office at room 420 Alabama Power Co. building, Birmingham, Ala., in charge of T. C. Peace, resident manager.

* * *

Fischer Special Mfg. Co., Cincinnati, O., manufacturer of screw machine products, has moved into its new plant at Dover and Morgan streets. C. Harry Fischer is president and treasurer.

* * *

Ikeda & Co., Tokio, Japan, engineers and contractors, have established an office at 7 Dey street, New York, in charge of L. R. Knapp, who for 18 years has been identified with Takata & Co., 150 Broadway. Ikeda & Co. will export steel, machinery and similar lines.

* * *

Black & Decker Mfg. Co., Towson, Md., has moved its Boston branch office to larger quarters at 62 Brookline street, Boston. The office will be in charge of A. D. Geiger, recently appointed branch manager to succeed D. G. Caywood, who has gone on special duty for the company.

* * *

Triumph Brass Foundry, Cincinnati, O., will be incorporated by Arthur Mingay to take over the interests of the Dayton Bronze Bearing Co. in the Oakley Brass Foundry Co. A general brass foundry jobbing business will be done.

* * *

Pittsburgh headquarters of the McKinney Steel Co. at 1411-12 Oliver building, to be vacated Oct. 1 when it moves to Cleveland, will be occupied by the Stalnaker Steel Co., which has formerly been located at 709 Oliver building.

* * *

Bullard Machine Tool Co., Bridgeport, Conn., announces the appointment of the following sales representatives: L. G. Daniels, Chicago; J. M. Welch, Pittsburgh; F. E. Hatch Jr., Syracuse, N. Y.; F. A. Thompson, Detroit.

* * *

Smith Scale Co., 265 West Spring street, Columbus, O., has bought the Angldile Scale Co., Elkhart, Ind., and will move its equipment to Columbus. J. G. Sims, president of the purchased company, will become general manager of the combined companies.

* * *

Lalor Fuel Oil System Co., Inc., 527 Colvin street, Baltimore, Md., has been succeeded by another company of the same name with 20,000 shares of no par value, formed by officers of the former company to take over and enlarge the present business. James D. Lalor, Robert S. Shriver and Albert E. Marshall are heads of the new company.

* * *

Lloyd & Arms, Wesley building, Philadelphia, is the style of a new firm organized by Robert L. Arms and N. P. Lloyd, formerly with the Consolidated Machine Tool Corp. of America. They will represent the Hendey Machine Co. exclusively in that territory.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

ANNISTON, ALA.—General Foundry Co., recently organized, has started production of machinery parts and general foundry work in the former Bosworth-Ardman machine shop. (Noted Sept. 10.)

BIRMINGHAM, ALA.—Birmingham Electric Co., 109 North Eleventh street, plans addition of a foundry and machine shop to its plant.

GADSDEN, ALA.—Agricola Furnace Co., has let contract for plant to manufacture warm air furnaces, including foundry 90x220 feet, assembly building 60x220 feet, sand blast room 50x80 feet, cupola room 40x40 feet and core room 30x40 feet, two 66-inch cupolas, all machinery electrically driven.

SPOCARI, ALA.—Warrior Cement Corp., 705 Battle place, Chattanooga, Tenn., A. C. Deer, president, has awarded contracts for machinery and buildings to increase its output largely.

SYLACOUGA, ALA.—Eagle Foundry & Machine Works is building a plant on Third street for the manufacture of fire grates and other light castings and later will produce pipe.

BERKELEY, CALIF.—Solano Iron Works, Allston and Third street, is having plans made for three 1-story buildings.

FRUITVALE, CALIF.—Pacific Spring Co. will build a 2-story plant, general contract being let to R. W. Littlefield, 354 Hobert street, Oakland, Calif.

LOS ANGELES—Pioneer Boiler & Machine Works, Inc., 2528 Santa Fe avenue, will build a new plant to afford added space for increased business.

SAN FRANCISCO—Austin Western Road Machinery Co., 435 Brannan street, is making extensions and improvements in its plant.

BRIDGEPORT, CONN.—Remington Typewriter Co., Railroad avenue, has had plans made for a 3-story addition for which machinery will be required.

BRIDGEPORT, CONN.—Bridgeport Aluminum Plate Co., Housatonic and Gold streets, is taking bids on a 1-story addition 35 x 65 feet. Harry Koerner, Bridgeport, is architect.

BRISTOL, CONN.—The Root Co. is receiving bids for a 4-story factory unit, 55 x 125 feet, for the manufacture of hinges and other hardware specialties. (Noted Sept. 24.)

EAST HARTFORD, CONN.—Treblas Brass Products Co. Inc. has been incorporated with $50,000 capital by J. Treblas, and W. Treblas of East Hartford and G. Kabureck of Rocky Hill, Conn.

WATERBURY, CONN.—French Mfg. Co., manufacturer of copper and bronze tubing, will build a 1-story power house. W. E. Hunt, Torrington, Conn., is architect.

DOVER, DEL.—Pulverized Minerals Co. has been incorporated with $200,000 capital by E. E. Craig, Dover, and associates.

WILMINGTON, DEL.—Cine Mfg. Corp. has been incorporated with $25,000,000 capital to manufacture machinery. Corporation Trust Co. of America is correspondent.

JACKSONVILLE, FLA.—Aetna Iron & Steel Co., 520 East Eighth srteet, has had plans made for an addition to cost $13,000.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

JACKSONVILLE, FLA.—Franz Safe & Lock Co. Inc. has been incorporated with $100,000 capital by G. R. Franz president and others, to take over the business of the Franz Safe & Lock Co., 27 South Hogan street.

MIAMI, FLA.—Miami Septic Tank Corp. has been incorporated with $25,000 capital by H. M. Bankhead and L. M. Pierce.

TAMPA, FLA.—Tampa Shipbuilding & Engineering Co. has plans under consideration for rebuilding the portion of its steel fabricating plant recently burned.

MANCHESTER, GA.—Atlanta, Birmingham & Atlantic railroad, L. L. Beall, Brown building, Atlanta, Ga., chief engineer, will build a machine shop here.

WAYCROSS, GA.—Railway Motor Car Co. has been incorporated with $50,000 capital to manufacture motor cars for railroad use by J. F. Lewis and Alexander K. Sessoms of Cogdell.

BELLEVILLE, ILL.—St. Clair Foundry Corp. will remove its plant to Centralia, Ill. soon, a site and $25,000 for erection of a new plant being provided by that city.

BRADLEY, ILL.—Kroehler Mfg. Co., 14 East Jackson boulevard, Chicago, is building a 1-story factory addition 80 x 160 feet for which the general contract has been let to Edward Taron, East Court street, Kankakee.

CENTRALIA, ILL.—St. Clair Foundry Co., Belleville, Ill., is having plans made for a 1 and 2-story furnace and stove factory here.

CHICAGO—K. Greaves, 2941 North Mozart street, has let contract to E. W. Sproul Co., 2001 West Pershing road, for a 1-story machine shop 41 x 72 feet.

CHICAGO.—C. W. Greenfield, 117 North Jefferson street, is building a 2-story machine shop 33x126 feet. P. A. Weber, 155 North Clark street, having the general contract.

CHICAGO—Great Lakes Forge Co., George C. Rodgson president and treasurer, 119th and Racine street, will build an addition, general contract being let to the Hallenberg Co., 11 South LaSalle street.

CHICAGO—Bradley Badger Engineering Co., 11253 South Michigan avenue, has been incorporated to manufacture clamshell buckets by C. J. Bradley, president, W. B. Gregg vice president and Marguerite M. Bradley secretary. (Noted Sept. 24.)

CHICAGO—General Etching & Mfg. Co., 312 South Hamlin avenue, Frederick Lubin president, will build a 1-story plant 139 x 223 feet at 3070 West Grand avenue. General contract has been let to Holton & Seeley, 140 South Dearborn street.

CHICAGO—Visible Records Equipment Co., 1432 Altgeld street, has been incorporated with $150,000 capital to manufacture office equipment and appliances by J. W. Wirt, Van A. Wirt, and W. S. Traenkel. Mark D. Goodman, 111 West Monroe street, is correspondent.

CHICAGO—Evers Box Machine Co., 140 South Dearborn street, has been incorporated with 200 shares of no par value to manufacture box-making machinery and mechanical devices by William J. Burke, Arthur J. Evers and R. J. Barry. Barry & Crowley, 79 West Monroe street, is correspondent.

JOLIET, ILL.—Burnham, Bland & Lindsey Co., 604 Joliet National Bank building, has been incorporated to manufacture electric equipment and supplies by William E. Austin, Daniel Harrington and E. C. Hall. Garnsey, Wood & Lehnon, 504 Joliet National Bank

Machinery Exports for August

(In numbers unless otherwise specified)

	August 1925	August 1924	Eight months ended August 1925	Eight months ended August 1924
Lathes	129	112	1,018	519
Boring and drilling machines	474	175	1,365	1,644
Planers, shapers and slotters	26	25	227	176
Bending and power presses	40	32	262	205
Gear cutters	22	14	313	377
Milling machines	125	36	693	266
Thread cutting and screw machines	123	48	622	476
Punching and shearing machines	36	23	160	139
Power hammers	16	15	172	150
Rolling machines	....	....	....	....
Sharpening and grinding machines	....	....	....	....
External grinding machines	75	210	1,060	2,219
Internal grinding machines	42	32	221	412
Other grinding and sharpening machines, pounds	85,160	73,434	1,038,038	809,843
Chucks for machine tools	3,015	1,386	18,973	15,905
Reamers, cutters, drills and other metal working tools, pounds	433,597	129,346	2,442,398	1,287,019
Pneumatic portable tools	1,117	934	10,568	9,053
Air compressors	....	520	....	4,004
Cranes:				
With swinging booms	22	1	69	38
Other cranes	16	36	126	158
Hoists and derricks, except mining	483	397	4,137	3,092
Ball and roller bearings, and parts of chains, pounds	124,071	98,907	1,247,695	1,765,361
Sprocket and power transmission, pounds	179,766	389,762	1,995,434	2,721,473
Other chains, pounds	1,175,507	746,617	8,705,226	6,731,388

building, are correspondents.

MOLINE, ILL.—Moline Implement Co., will remodel its power house and install a new steel jacketed boiler. Moline Heating & Construction Co. has been awarded the general contract.

CEDAR RAPIDS, IOWA.—University Crusher Co., W. L. Harris president, is building a 1-story addition 40 x 100 feet. General contract has been let to Edward Monilaw, 2240 First avenue.

SIOUX CITY, IOWA.—Auto Specialties Co., 219 West Seventh street, is building a 1-story plant 100 x 150 feet. General contract to Coomer & Small, U. B. building.

SHREVEPORT, LA.—Texas & Pacific Railroad Co., 1003 Texas & Pacific building, Dallas, Tex., E. F. Mitchell chief engineer, is building a shop group here, including roundhouse, machine and blacksmith shops and repair sheds. Similar construction is being carried on at Dallas by the same road.

BOSTON—Thompson Wire Co., 41 Mildred avenue, Dorchester, is having plans made for a 1-story addition to its factory. Brainard & Leeds, 89 Franklin street, Boston, are architects.

BOSTON—Gilman Brothers Body & Fender Woks, Inc. has been formed with $25,000 capital by Joseph Gilman, Everett, Mass., Heinie Gilman, and John Gilman, both of Malden, Mass.

BOSTON—Acme Auto Wheel Co., Inc., has been formed with $90,000 capital by Raymond W. Alden, Constance Alden, both of Boston, Arthur A. Newcomb and Allan D. Newcomb, both of Whitman, Mass.

BOSTON—Schoolhouse department, City Hall J. H. Mahony chairman, is in the market for complete welding and cutting equipment for the Boston trade school and sheet metal working machinery for the mechanical arts trade school.

CHELSEA, MASS.—The Royal Insulation Moulding Co. has been incorporated with $25,000 capital by Jerry Nabarian, Cambridge, Mass., Charles J. Beatey, Boston, and Clotilde E. Jones, Winthrop, Mass.

BENTON HARBOR, MICH.—Benton Harbor Forging Co. has awarded a contract to the Max W. Stock Construction Co. for an addition 36x60 feet in its hammer shop.

DETROIT.—Bohn Aluminum & Brass Corp. Machine Co. is installing complete sand handling machinery in its foundry here.

DETROIT—Murray Body Corp., F. J. Krumm secretary and treasurer, Russell & Aberle streets, is having plans made for an addition.

DETROIT — Chadwick-LeClair Co., 5143 Trumbull avenue is having sketches made for a 1-story machine shop 44 x 80 feet.

DETROIT.—Edward G. Budd Mfg. Co., Twenty-fifth street and Hunting avenue, Philadelphia, will build a branch plant here, including a 4-story building 100x725 feet, for the manufacture of steel automobile bodies.

DETROIT, MICH.—Hotto Engineering Co., 515 Lycaste street, M. C. Hotto president, will build a 1-story machine shop 60 x 140 feet. The Austin Co. has been given the general contract.

FLINT, MICH.—Flint Brass Works, Inc., G. J. Gutnam president, manufacturer of automobile specialties, is considering an addition to its plant.

HANCOCK, MICH.—Calumet & Hecla Mining Co. is building an addition to its furnace building.

IRON MOUNTAIN, MICH.—Anderson Machine Co. will build a 1-story addition 60 x 65 feet to its machine shop.

MUSKEGON, MICH.—Lakey Foundry & Machine Co. is installing complete sand blasting machinery in its foundry here.

ROYAL OAK, MICH.—Royal Oak Tool & Machine Co. is having plans made for an addition to double its capacity, to be erected early next year.

STURGIS, MICH.—Morency Van Buren Co., A. F. Morency manager, is building a 1-story addition to its brass foundry 50 x 75 feet. The general contract has been let to the Boyen Construction Co., 7 Hagerman Freeland building.

MINNEAPOLIS—Twin City Separator Co., 1701 Madison street, N. E., builder of separating equipment, will build a 1-story addition 65 x 100 feet. Bland Engineering Co., Kennedy and L streets, is engineer.

MOORHEAD, MINN.—City of Moorhead, R. G. Price auditor, will build a municipal power plant to cost $108,000.

SPRINGFIELD, MO.—Standard Semi-Steel Foundry Co., C. T. Wilks general manager, is having plans made for a 1-story foundry 65 x 200 feet on Chase street. Traveling cranes of 5 and 10-ton capacity will be required.

ST. LOUIS—Southern Wheel Co., Commonwealth building, Pittsburgh, is preparing to build a car wheel plant at Goodfellow street and Terminal railroad.

GREAT FALLS, MONT.—Anaconda Copper Mining Co., John D. Ryan chairman, C. F. Kelley president, has plans for enlarging output of its plant here by one-third.

CARTERET, N. J.—The United States Metals Refining Co. has awarded a 200-ton steel contract to the Pittsburgh Bridge Works, for a plant addition.

JERSEY CITY, N. J.—Best Auto Body Co. has been incorporated with $125,000 capital to manufacture bodies for motor vehicles by Julia Patchick, Bayonne; John Urbanski, Stephen P. Piga, Jersey City.

JERSEY CITY, N. J.—Kenneth Apolant, 334 Hoboken avenue, is building an auto repair shop, one story, 70x98 feet. General contract to D'Elia Contracting Co., 994 West Side avenue, Jersey City.

LONG BRANCH, N. J.—Manual training equipment is likely to be installed in the new $375,000 high school, bids on which have been recently asked. E. A. Arend, Red Bank, N. J., is architect.

NEWARK, N. J.—J. S. Mundy Hoisting Engine Co., 696 Frelinghuysen avenue, will build an addition to its plant.

NEWARK, N. J.—Atlas Fence Co., 1 Clinton street, manufacturer of wire and iron fence, is having plans made for a plant on a site just bought on Verona avenue.

NEWARK, N. J.—General Steel Casting Co., Lister avenue and Chapel street, suffered loss by fire which burned its foundry. Plans for rebuilding are being made.

NEWARK, N. J.—Bilmarjac Corp., recently formed, is negotiating for a site for its plant, which will include a number of units, the first to be 90x150 feet. The company will take over the plant of the National Vacant Seat Indicator Co., Pomona, Calif., and will develop its main works there. Its output will be electrical appliances.

PERTH AMBOY, N. J.—Miso Mfg. Co., 453 New Brunswick avenue, a new concern organized to manufacture oil gages and other metal specialties, is in the market for thin gage steel tubing, screw machine products, stampings, strip steel and brass castings. A. Shapira is manager.

RAHWAH, N. J.—Little Neck Valve Tool Co. has been incorporated with $125,000 capital to manufacture tools by Henry L. Lamphear, George M. Friese, Paris R. Formin and John A. Josephson.

TRENTON, N. J.—Joseph Steinert Machine Works, St. Joes and Mulberry streets, will build a 1-story addition.

BROOKLYN, N. Y.—Mobogan Tube Co., Scott avenue, is building a 5-story plant

German Tools Regaining Former Position

WASHINGTON, Oct. 3.—Writing on the machine tool industry in Germany last year, Trade Commissioner Theodore Pilger, stationed at Berlin, informs the department of commerce that 1924 was the first stable year for the German manufacturing industries since the outbreak of the World war, and that Germany's machine tool trade enjoyed partial quiet and security after having been much disturbed by changes in manufacturing processes, engineering work, and scientific developments.

Exports of machine tools from Germany last year were 34,040 tons, comprising 128,000 units and a total value of 53,500,000 gold marks. Of this total, about half, 17,230 tons, was shipped to neighboring countries of Europe. Countries of Europe also absorbed almost half of the machine tools exported from the United States.

The tonnage exported last year shows a drop to about 46 per cent of 1913 exports, whereas the value of Germany's exports of machine tools last year amounted to 65 per cent of the 1913 price. This indicates, that for a given class of machinery the average price per pound in 1924 was 141 per cent of the 1913 price. The value of Germany's exports in the first half of 1925 is about the same as the average rate for the years 1910 to 1912.

The tonnage exported during January to June, this year, is 72 per cent of the 1910-1913 average, which again shows the price index of German machine tools at 140 per cent of the 1912-1914 average. The machine tool tonnage exported during the January to June period is at a rate about equal to that of 1923.

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports	
Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces	
Foundry and basic 53 to 63 per cent	9.00 to 10.00
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports	
Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	9.00 to 10.00
Riff low phosphorus, 65 to 66 per cent	9.50 to 10.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent	9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent	8.50 to 9.00
Algerian foundry and basic, 50 to 54 per cent	8.50 to 9.00

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.. nominal
Indian, minimum 47 per cent.....nominal
Caucasian, 53 to 55 per cent.....
....Washed, 43 to 45 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton..	$16.00
Washed gravel, imported duty paid eastern tidewater, per net ton	16.50 to 17.50

90x281 feet. General contract to Commonwealth Engineering Corp., 103 Park avenue, New York.

BUFFALO, N. Y.—Dupont Rayon Co., River road, has let a contract to the Dupont Engineering Co. for construction of a plant double the present buildings. The new building will have 800,000 square feet of floor space, while the present plant has 400,000 square feet. L. A. Yerkes is president of the company.

EASTWOOD, N. Y.—B. & F. Mfg. Co., 122 Nichols avenue, recently incorporated, will manufacture steam carburetors in rented quarters for the present, building a plant later. F. A. Brewer is president and manager.

MEDINA, N. Y.—Tucker Foundry Co. has been incorporated with $250,000 capital to operate a gray iron foundry by A. H. Tucker, F. W. Austin and F. C. Tillman. Coe & Harcourt, Medina, are attorneys.

MOUNT MORRIS, N. Y.—Mount Morris Valve Corp. has been incorporated with 750 shares at $100 each and 1500 common at $50 each by F. E. Vandorn, D. L. Bellinger and E. Scobell. Sutherland & Dwyer, Rochester, are attorneys.

NEW YORK.—Hassler Iron Works has been incorporated with $5000 capital by R. Hassler, A. Hassler and J. F. Seacriff. T. J. Kinsella, 215 Montague street, is attorney.

NEW YORK.—Elkay Wire Frame Works has been incorporated with $10,000 capital to manufacture lamp shades by S. A. Fried, I. Lihskin. M. H. Michaels, 291 Broadway, is attorney.

NEW YORK—Lazaroff & Lifschitz have been incorporated with $5000 capital to operate an ornamental iron manufacturing plant by A. Gorelick, J. Metter and F. E. Block. E. Merl, 266 Belmont avenue, is attorney.

NEW YORK—Pneuvac Mfg. Co. has been incorporated with $100,000 capital to manufacture conveying equipment by E. V. Conroy. P. W. Remig, E. L. Remig. J. M. Coleman, 32 Broadway is attorney.

NEW YORK.—Edward Otten Co. has been incorporated with $20,000 capital to operate a metal working plant by J. Schoenfield, F. Butt and J. F. Dailey. M. A. Schlesinger, 44 Beaver street, is attorney.

NEW YORK.—H. & R. Scrap Metal Co. has been incorporated with $10,000 capital to deal in and prepare scrap metals by I. Hartenstein, P. Hartenstein and M. Reiken. F. Jacobs, 217 Havemeyer street, is attorney.

NEW YORK.—Harry M. Sandak has been incorporated with $20,000 capital to manufacture sewing machines by H. M. Sandak, N. Rendberg and S. S. Goldfarb. E. I. Herbst, 116 Nassau street, is attorney.

NEW YORK—George Haiss Mfg. Co., Park avenue and 141st street, manufacturer of crawler attachments and wagon loaders, is building a 1-story machine and assembling plant 150 x 225 feet.

NEW YORK—National Metal Etching Co., 42 Broadway, recently incorporated, has let a contract for a 3-story plant 150 x 200 feet, at Long Island City, to Barney Ahlers Construction Co., 110 West Fortieth street.

NEW YORK—Granite Tool Corp. has been incorporated with 100 shares common stock no par value to manufacture tools and equipment, by O'Leary, C. Dinkser and A. R. McDermott. Frank, Weil & Strouse, 185 Madison avenue, are attorneys.

NEW YORK—Board of transportation, Municipal building, John H. Delaney, chairman, purposes building machine and forge shops and car repair buildings for the subway system in connection with the new terminal at 216th street and Harlem river.

NEW YORK—The general contract has been awarded by the Vacuum Oil Co., 61 Broadway, for a $100,000 storage and distributing plant at Paulsboro, N. J. The White Construction Co., 1015 Chestnut street, Philadelphia, received the contract.

NEW YORK.—Thersm Steel Construction Co. has been incorporated with $10,000 capital to manufacture ornamental iron and steel by S. H. Fellows, S. T. Fellows and G. Odenwald. J. D. Armstrong, 189 Montague street, is attorney.

ALLIANCE, O.—Alliance Toy & Specialty Co. has had plans made for a 1-story plant for the manufacture of steel and wooden toys.

CINCINNATI, O.—Eastern Machinery Co. has been incorporated with $50,000 capital by Harry F. Oberhelman, George H. Bierbaum, Frederick A. Bierbaum, Neil Doda and Charles W. Peck.

CINCINNATI, O.—Patterson Parts Co. has been incorporated with $25,000 capital by Harry J. Patterson, Nadia J. Patterson, W. B. Cunningham, Florance L. Cunningham and Richard Remke.

CLEVELAND—Lang Body Co. C. E. Lang president, 2088 West 106th street, is building a 1-story addition 80 x 182 feet.

CLEVELAND—Cleveland Metal Treating Co. has been incorporated with $10,000 capital by R. L. Toben, M. C. Murray, M. M. Reilly, H. W. Lower and John H. Hogg.

CLEVELAND—Willard Storage Battery Co., T. A. Willard president, 248 East 131st street, is building an addition to its machine shop and adding a chimney.

CLEVELAND—W. S. Tyler Co., 3615 Superior avenue. Proctor Patterson president, is building an addition to its foundry and making alterations. Addition is one story and mezzanine, 38 x 40 feet. General contract let to S. W. Emerson Co.

CLEVELAND—Lion Drilling Machine Co. has been incorporated with $500 capital by Maurice W. Bruml, Frank J. Bruml, Joseph J. Stashower, Betty G. Feran and Hannah Fisher.

FINDLAY, O.—Buckeye Traction Co., L George, chief engineer, is building a plant including a storage building, 62x117 feet, forge shop 38x100 feet, assembly shop 120x141 feet and storage building 62x117 feet, all one story. General contract has been let to Alge Bros. Co., Ewing building, Findlay.

TOLEDO, O.—State Automobile Accessory Co. has been incorporated with 10,000 capital by Byron Gardner, Fred A. Riehm, L. M. Slater, L. C. Young and I. G. Riopelle.

TOLEDO, O.—Electric Auto Lite Co., O. O. Miniger president, will build a 4-story commercial building 50 x 134 feet. Gettins Kopitke Co., Fifteenth street and Wabash avenue, has the general contract.

YOUNGSTOWN, O.—Heller-Murray Co. has been given the general contract for rebuilding the burned foundry of the Youngstown Foundry & Machine Co., Poland avenue. (Noted Sept. 10.)

YOUNGSTOWN, O.—Gulliford Bearing Co. has been incorporated with $5000 capital by Samuel B. Gulliford, Mark Perkins, Thomas J. Reese, Dorothy S. Gulliford and Katherine Aurelius.

YOUNGSTOWN, O.—Youngstown Welding Co., W. D. McKay president, manufacturer of truck tanks and plate fabrications, will build a new plant 70 x 200 feet to give needed additional space.

PORTLAND, OREG.—Electric Steel Foundry has been incorporated with $150,000 capital to operate a steel casting business.

BLAIRSVILLE, PA.—Conemaugh Iron Works was damaged by fire, machinery and patterns suffering most. Owners probably will rebuild.

CORRY, PA.—Plans are being made for rebuilding the burned plant of the Corry Steam Boiler Works. James P. Mead is manager.

PHILADELPHIA—Phosphor Bronze Smelting Co., 2200 Washington avenue has let contract to Belmont Iron Works for a 1-story addition.

PHILADELPHIA—Eagle Charger Corp., 121 North Eighth street, recently incorporated will manufacture electrical and radio accessories. I. A. Margolies is treasurer.

MILWAUKEE—Seamless Steel Products Co., Greves and Twenty-seventh streets, is building a 1-story addition 50 x 86 feet. Meredith Brothers Co., 253 Washington street have been given the general contract.

MILWAUKEE—Seeger Sheet Metal & Furnace Co. has been incorporated with $10,000 capital to operate a general sheet metal working shop by Fred C. Seeger, 763 Fifty-second street, L. A. Erhart and Frank O'Connor. (Noted Oct. 1.)

MILWAUKEE—Bids are being taken by the city of Milwaukee for furnishing the department of public works three stokers, two vacuum pumps and one feed water heater. J. W. Nicholson is chief of the purchasing department.

NEOPIT, WIS.—The Menominee India Mills, which will build a $250,000 sawmill here, in place of the mill destroyed by fire a year ago, let the following contracts: architectural work and general contract, Prescott Co., Menominee, Mich.; corliss engine, Nordberg Mfg. Co., Milwaukee; electrical equipment, motors, etc., Wastinghouse Electric & Mfg. Co.; electrical control apparatus, Cutler-Hammer Mfg. Co., Milwaukee; building construction, Wisconsin Engineering & Construction Co., Green Bay, Wis.

WAUSAU, WIS.—The Wisconsin Valley Electric Co., 206 Third street, will build a garage and machine shop for its equipment, rolling stock, etc., 65 x 150 feet, part two stories, costing about $50,000. Plans are by Architects Oppenhamer & Obel, Wausau and Green Bay, Wis. Harold L. Geisse is general manager.

Refractories

FIRE CLAY BRICK
Per 1000 f.o.b. works

Pennsylvania, No. 1	$43.00 to 46.00
Pennsylvania, No. 2	35.00 to 40.00
Ohio, No. 1	43.00 to 46.00
Ohio, No. 2	38.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	43.00 to 45.00
Kentucky, No. 2	40.00 to 43.00
Missouri, No. 1	41.00 to 43.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	43.00 to 47.00
Maryland, No. 2	39.00 to 42.00

SILICA BRICK

Pennsylvania	$40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK
Per Net Ton Seaboard Base

9 x 4½ x 2½	$65.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$48.00

Business in Canada

GRANVILLE, ISLAND, B. C.—The Weir Machinery Co., Pacific and Richards street, Vancouver, B. C., has let the general contract for machine shop here to Peter Tardic, 3391 Twenty-second avenue west, Vancouver, B. C.

BARROW BAY, ONT.—Clark Sensabaugh proposes to start work immediately on addition to power plant and the installation of equipment.

LONDON, ONT.—The London Box Mfg. & Lumber Co., has started work on repairs to its factory here and will purchase machinery and tools.

NIAGARA FALLS, ONT.—The Canadian Shredded Wheat Co. contemplates the erection of a factory addition nad boiler house here to cost $50,000.

NORWICH, ONT.—The Norwich Electric Co., W. C. Hunt manager, has purchased the old Molson bank building here and plans to remodel and install machinery for the manufacture of electrical fixtures, etc. Owners will be in charge of all work in connection with undertaking.

PORT ARTHUR, ONT.—The Provincial Paper Mills has awarded contracts in connection with mills at Bare Point. The contract for erection of acid plant has been let to G. O. Jenssen Co., 200 Fifth avenue, New York, and the general contract for repair shop to W. J. Trimble, Toronto, Ont.

TORONTO, ONT.—The Neptune Meter Co., 1197 King street west, has acquired larger premises on Sorauren avenue, where it proposes to move its plant about the first of the year.

DRUMMONDVILLE, QUE.—The Southern Canada Power Co., Ltd., has awarded additional contracts in connection with power plant here.

PERIBANCA, QUE.—The Port Alfred Pulp & Paper Co., 190 St. James street, Montreal, Que., has awarded following contracts in connection with pulp and paper mills here: piles, Canadian MacArthur Concrete Pile Co., 10 Cathcart street, Montreal; structural steel, Dominion Bridge Co., Lachine, Que.; gypsum, Lathrop-Hoge Construction Co., Cincinnati.

THREE RIVERS, QUE.—Plans are being prepared for four new units here for the St. Maurice Paper Co., Canada Cement building, Montreal, Que., to cost $5,000,000.

New Trade Publications

TRUCK PLATFORMS—Steel bound truck platforms and handling equipment for use with industrial trucks are described in a bulletin by the Wilder-Strong Implement Co., Monroe, Mich. Details of construction designed to give strength and long life are shown.

INDUSTRIAL BUILDINGS—An annual issue of the Austin book of buildings by the Austin Co., Cleveland, is being mailed, the eighth edition. It contains a chart of the trend of building cost for seven years, table of comparative insurance rates, a ten-page technical section covering descriptions, advantages and relative cost of various types of doors, walls, roof structures, wall facings and roof waterproofing and many other features. There are also many illustrations of Austin buildings.

PYROMETERS—Taylor Instrument Companies, Rochester, N. Y., is issuing a leaflet describing its self-contained, high temperature portable pyrometer, designed to meet demand for a low-priced instrument for intermittent rough checking purposes above the range of mercury instruments. Its range is from zero to 2200 degrees Fahr. or to 1200 degrees Cent.

WORK EJECTOR—A work ejecting air compressor is illustrated in a bulletin by the Logansport Machine Co., Logansport, Ind., to eject work from machines automatically. Attached to a punch press this device operates from air compressed by the down stroke of the ram and automatically released on the up stroke, the air ejecting the completed article into a chute or receptacle. The company's air-operated chucks are also shown.

PUNCH PRESS DATA—A chart showing the shearing strength of materials has been compiled and issued by the F. J. Littell Machine Co., 4127 Ravenswood avenue, Chicago, for use in connection with punch press work. It is printed on heavy board and is designed to be hung beside the machine for reference.

PETROLEUM REFINING—A booklet has been published by the J. G. White Engineering Corp., engineers and constructors, New York, giving a brief description of organized and experienced engineering and construction servive as applied to the petroleum industry. Copious illustrations are presented of details of construction and operation in actual installations, with ample text to describe them fully. A map showing the several oil fields of the United States and pipe lines from field to refinery is a feature.

TOOL STEELS—A handsome cloth-bound volume on tool steels, constituting a handbook for the purchasing agent, the steel treater and user has been issued by E. S. Jackman & Co., selling agents for Firth-Sterling Steel Co., McKeesport, Pa. It is designed to be useful to the buyer, to the scientific-technical man with engineering or metallurgical training and also to the man in the shop who selects, treats and uses tool steels. It also is a catalog of the steels made by this company, with data to guide in selection of the proper grade.

HIGH-TEMPERATURE ALLOY—American Manganese Steel Co., Chicago Heights, Ill., announces in a brief bulletin the qualities of its new alloy which is designed to be used in castings to resist high temperatures and corrosive processes. It is supplemented by an exhaustive treatise on the use of metals at high temperatures by F. A. Fahrenwald, for whom the alloy has been named.

PAINTING OUTFITS—Portable appliances for quick and complete painting in industrial plants are shown in a bulletin by the Paasche Air Brush Co., Chicago, Ill. Paint is applied by compressed air through the medium of a hand-operated device that spreads it according to the will of the operator.

FIRE EXTINGUISHER—Fyr-Fyter Co., Dayton, O., has issued a bulletin describing its one-gallon extinguisher for use in industrial plants and other buildings. This is a new size designed to be portable and hand operated, with sufficient capacity to handle any incipient fire.

DIES—High-speed, automatic threading dies based on high-speed chasers are described and illustrated in a booklet by the Jones & Lamson Machine Co., Springfield, Vt. Illustrations are clear and the text explains what is sought and accomplished in attaining accuracy in threads.

DRAFT INDICATOR—A bulletin by the Republic Flow Meters Co., Chicago, illustrates its appliances for measuring draft and pressure. The zero setting is permanent for each instrument and all readings are on one eye-level, giving the greatest possible ease of reading.

Sheet Extras and Differentials

Black Sheets

Gage Differentials

Gage	Price per 100 pounds
30 Add	$0.20
29 Add	0.10
28 (Carload quantities)	Base
27 Deduct	0.05
25-26 Deduct	0.10
22-24 Deduct	0.15
17-21 Deduct	0.20
15-16 Deduct	0.25
13-14 Deduct	0.30
10-12 Deduct	0.35

BLACK EXTRAS FOR WIDTH

Gages	Under 12 inches to 6 inches	Under 24 inches to 12 inches	24 inches to 32 inches	Over 32 inches to 36 inches	Over36 inches to 40 inches	Over 40 inches to 44 inches	Over 44 inches to 48 inches
10 to 16	0.20	0.10	Base	Base	Base	Base	Base
17 to 18	0.25	0.15	Base	Base	0.05	0.05	0.05
19 to 21	0.25	0.15	Base	Base	0.15	0.15	0.25
22 to 24	0.25	0.15	Base	Base	0.20	0.40	0.40
25 to 27	0.30	0.20	Base	Base	0.20	0.40	...
28	0.30	0.20	Base	0.10	0.40	...	...
29 to 30	0.30	0.20	Base	0.10	...	...	...

BLACK EXTRAS FOR LENGTH

Gages	Under 30 inches to 18 inches	Under 60 inches to 30 inches	60 inches to 124 inches	Over 124 inches to 144 inches
10 to 16	0.15	0.10	Base	Base
17 to 18	0.25	0.15	Base	0.10
19 to 21	0.25	0.15	Base	0.10
22 to 24	0.25	0.15	Base	0.10
25 to 30	0.30	0.20	Base	0.10

Galvanized Sheets

Gage Differentials

Gage	Price per 100 pounds
30 Add	$0.50
29 Add	0.25
28 (Carload quantities)	Base
27 Deduct	0.15
25-26 Deduct	0.30
22-24 Deduct	0.45
17-21 Deduct	0.60
15-16 Deduct	0.75
12-14 Deduct	0.90
10-11 Deduct	1.00

GALVANIZED EXTRAS FOR WIDTH

Gages	Under12 inches to 6 inches	Under 24 inches to 12 inches	24 inches to 32 inches	Over 32 inches to 36 inches	Over 36 inches to 40 inches	Over 40 inches to 42 inches	Over 44 inches to 44 inches	Over 48 inches to 52 inches	Over 52 inches to 54 inches
10 to 15	0.25	0.20	Base	Base	Base	0.10	0.20	0.30	0.40
16	0.25	0.20	Base	Base	0.10	0.10	0.20	0.35	0.50
17 to 17	0.30	0.20	Base	Base	0.10	0.10	0.20	0.35	0.50
19 to 21	0.30	0.20	Base	Base	0.20	0.30	0.40	0.50	0.75
22 to 24	0.30	0.20	Base	Base	0.20	0.40	0.60	...	...
25 to 26	0.35	0.25	Base	Base	0.30	0.60	...	...	...
27	0.35	0.25	Base	0.10	0.50	0.75	...	...	...
28	0.35	0.25	Base	0.20	0.60	...	...	...	...
29 to 30	0.35	0.25	Base	0.20	...	...	...	...	...

GALVANIZED EXTRAS FOR LENGTHS

Gages	Under 30 inches to 18 inches	Under 60 inches to 30 inches	60 to 124 inches	Over 124 inches to 144 inches	Over 144 inches to 168 inches	Over 168 inches to 180 inches	Over 180 inches to 192 inches	Over 192 inches to 216 inches	Over 216 inches to 228 inches
10 to 12	0.20	0.10	Base	Base	0.50	0.60	0.60	0.75	1.00
13 to 14	0.20	0.10	Base	Base	0.50	0.75	0.75	1.00	1.50
15 to 16	0.20	0.10	Base	Base	0.50	0.75	...	...	...
17 to 24	0.30	0.20	Base	0.10	...	...	...	...	...
25 to 30	0.35	0.25	Base	0.10	...	...	...	...	...

Blue Annealed Sheets

GAGE DIFFERENTIALS

Gage	Price per 100 pounds
8 and heavier	Less $0.05
9 and 10, carload quantities	Base
11 and 12	0.05
13 and 14	0.10
15 and 16	0.20

EXTRAS FOR WIDTH

Gage	Extra per 100 pounds
16 and heavier under 24 to 12-inch	$0.10
16 and heavier under 12 to 6-inch	0.15
16 and heavier under 24-inch and wider	None

EXTRAS FOR LENGTH

Gage	Extra per 100 pounds
16 and heavier, 60-inch and longer	None
16 and heavier, under 60 to 30-inch	0.10
16 and heavier, under 30 to 18-inch	0.15
Deoxidizing	0.15
Extra deep stamping or drawing	0.50

STANDARD MISCELLANEOUS EXTRAS

	Extra per 100 pounds
Blued range steel	$0.70
Blued range steel patent leveled	0.95
Blued stove pipe stock, 25 gage and lighter	0.20
Blued stove pipe stock, 24 gage and heavier	0.50
Enameling stock, pickled and annealed finish	0.50
Deep stamping or drawing	0.25
Extra deep stamping or drawing	0.50
Extra box anneal	0.15
Full cold rolled and reannealed	0.25
Full pickled, full cold rolled and reannealed	0.75
Lime finish	0.10
Long ternes, special finish	0.75
Oiling	0.10
Patent or stretcher leveling	0.25
Pickled, annealed, cold rolled and reannealed for tinning	0.50
Resquaring, 5% of price of sheet at time of resquaring.	
Roller leveling	0.10
Single pickled	0.45
Single pickled, cold rolled and reannealed	0.50
Single pickled, oiled or lime finish	0.55
Carbons over 0.25 to 0.40 per cent	0.10
Carbons over 0.40 to 0.60 per cent	0.25
Carbons over 0.60 to 0.90 per cent	0.40
First grade metal furniture stock, full pickled, full cold rolled, reannealed, stretcher leveled, not resquared	1.00
Second grade metal furniture stock, single pickled, full cold rolled reannealed, stretcher leveled, not resquared	0.85

Automobile Sheets

	Primes with seconds up to 15% per 100 lbs.
Automobile body stock	Base, 22 gage
Auto body stock, deep stamping	0.25
Auto body stock, extra deep stamping	0.50
Hood, flat fender, door and apron, or splash guard stock	0.25
Crown fender, cowl and radiator casing, deep stamping	0.50
Crown fender, cowl and radiator casing, extra deep stamping	0.75

Price of seconds, 10 per cent less than the invoice price for corresponding primes.

EXTRAS FOR EXTREME WIDTHS

	Per 100 lbs.
10-16 gage over 36 inches to 44 inches	0.10
10-16 gage over 44 inches to 48 inches	0.35
10-16 gage over 48 inches to 52 inches	0.50
17-18 gage over 36 inches to 44 inches	0.10
17-18 gage over 44 to 48 inches	0.20 to 0.35
17-18 gage over 48 inches to 52 inches	0.60
18 gage and heavier under 24 to 12 inches	0.15
18 gage and heavier under 12 to 6 inches	0.25
19 gage and lighter under 24 to 12 inches	0.15
19 gage and lighter under 12 to 6 inches	0.25
19-21 gage over 36 inches to 44 inches	0.30
19-21 gage over 44 inches to 48 inches	0.50
22-24 gage over 36 inches to 40 inches	0.40
22-24 gage over 40 inches to 44 inches	0.80

Black sheet extras to apply on narrow widths.

EXTRAS FOR LENGTHS

	Price per 100 pounds
16 gage and heavier over 60 inches to 144 inches	Base
16 gage and heavier under 60 inches to 30 inches	$0.10
16 gage and heavier under 30 inches to 18 inches	0.15
17 to 24 gage over 24 inches to 144 inches	0.10
17 to 24 gage under 60 inches to 30 inches	0.15
17 to 24 gage under 30 inches to 18 inches	0.25
25 gage and lighter over 24 inches to 144 inches	0.10
25 gage and lighter under 60 inches to 30 inches	0.20
25 gage and lighter under 30 inches to 18 inches	0.30

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	46	42½
¾-inch	60	48½
1 to 3 -inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛ inch	41	24½
¼ and ⅜ inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis

THREADS AND COUPLINGS		
Butt Weld		
⅛ and ¼-inch	+11	+39
⅜-inch	22	2
½-inch	28	11
¾ to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
⅛ and ¼-inch	+19	+34
⅜-inch	21	7
½-inch	28	12
¾ to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	13
4½ to 6-inch	26	14
7 to 8-inch	21	7
8 to 12-inch	16	2

DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
⅝-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)	
2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off
CHARCOAL IRON	
1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5
SEAMLESS COLD DRAWN	
1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off
SEAMLESS HOT ROLLED	
2 and 2¼-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½,5 and 6-inch	44 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon, .0.10 to 0.20 per cent	55 off
Carbon, 0.30 to 0.40 per cent	50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼ inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base.

Extras per Pound for Width or Diameter

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square feet, if ordered to weight—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼ inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{32}$-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 inches Wide

Plates less than ¼-inch gage to and including $\frac{7}{32}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept., or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection ..... No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH or DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet..No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c